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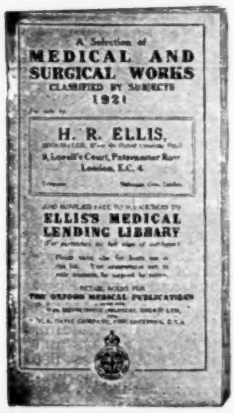

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Conduct, then, may be criminal, but there are no criminal aptitudes, and it is only rarely, and in a more or less figurative sense, that we can speak of criminal impulses. Now while it may be possible to bring impulses and aptitudes into direct relation with biological conditions, it is clear that we cannot establish such an immediate relationship in the case of conduct; conduct, whether criminal or non-criminal, depends also, of course, on biological conditions, but it is not a direct and immediate result of such conditions alone; it is a product of their interaction with factors of the social environment, countless in number and infinitely complex in character. What we are to infer from this is, then, that the consideration of crime from the biological point of view must be directed, not to the vain quest of a specific criminal diathesis, but to the more modest aim of determining, so far as such determination is possible, the manner and degree in which modes of biological constitution, permanent or transitory, may assist or retard the environmental forces that tend to give to conduct a criminal or a non-criminal bias.

That is, in fact, the sort of inquiry which has to be made in individual cases for the practical purposes of the administration of the law, for the assessing of legal responsibility, and for the adjustment of penal treatment. And it is through the analysis of the accumulated data obtained from a multiplicity of individual inquiries on the same clinical lines that we are most likely to arrive at any just conceptions regarding the biological factors in crime.

TWO STATISTICAL FACTS OF CRIMINALITY.

To a limited degree, however, this clinical method may be supplemented, and some of its results may be controlled, by another method—by the examination of certain broad statistical facts of criminality. The latter method will furnish material for some tentative conclusions of considerable value in relation to the special question with which we are here concerned—the question of the influence of mental defect on conduct. It has been shown that criminal conduct involves the same aptitudes, and for the most part the same impulses, as non-criminal conduct, and that it is, therefore, idle to look for a specific biological difference between these socially diverse modes of activity; but it is not inconsistent with this position to recognise that there are biological conditions which may in a certain sense predispose to crime, so that, other things being equal, these conditions will be, on the average, operative in greater degree in criminals than in non-criminals when these two social categories are considered in a general view. Thus most crime that is not professional is due to failure of inhibitory control, to inability to refrain from the immediate satisfaction of impulse, though such satisfaction conflicts with the legal standards of conduct. And this failure may obviously come about in two ways—the impulse may be unduly strong, or the power that should control and direct it may be unduly weak. These two factors—strength of impulse and power of inhibition—are constantly varying in each individual under the influence of the innumerable and complex conditions of social life, conditions so multiform and subject to such rapid change that the direct and indirect effects of their interaction defy analysis. But apart from the incalculable fluctuations arising in this way, there are other fluctuations in impulse and in inhibitory power which, as they depend on organic modifications of a more general and more stable character, can be traced in the wide movements of conduct statistics.

Age and Self-Control.

One such organic condition—and a very important one—is age. And the influence of age on criminal proclivity is in fact very distinct and characteristic, whether we consider the statistics of crime in general or the statistics of particular forms of crime. As will be seen from the figures in Table I., the age of

maximum criminality is the period 16–21, the period of adolescence. The proportion of criminals to population of the same age is at its highest during that period, and falls steadily in each successive age-group.

TABLE I.—*Relation of Criminality to Age.*

Proportions at different age-periods—per 100,000 of population—of persons convicted of indictable offences in England and Wales in the years 1893 and 1905.

Age.	1893.	1905.	Age.	1893.	1905.
Under 12	24	23	30 to 40	204	210
12 to 16	261	218	40 to 50	143	158
16 to 21	*321*	*275*	50 to 60	92	91
21 to 30	245	247	Above 60	56	53

That is, of course, what we should expect to find if crime were due, in any important measure, to weakness of inhibitory control; in the years of adolescence, when the power of restraining and regulating impulse is still feeble and immature, the criminal tendency should be greatest; with the advance into manhood and the gradual establishment of self-control and the capacity of subjecting instinct to the governance of legal and moral standards, the frequency of crime should decrease. And it may be added that we should expect to find just the reverse condition if crime were, as it is sometimes asserted to be, the result of a specific anti-social disposition, the manifestation of a specific criminal diathesis. On that theory criminality, instead of decreasing, should tend to increase with age, by the addition from each successive age-group of new recruits to the army of constitutional and instinctive law-breakers.

Age, then, is a condition which appears to affect criminal tendency mainly through its relation to the power of self-control; it modifies the strength of impulses, too, no doubt, but its more important and effective action is clearly on the degree of capacity to restrain and govern impulsive activity.

Seasonal Fluctuations of Sexual Offences.

In the seasonal fluctuations of sexual offences, to which I have next to direct your attention, we have, on the other hand, an instance of the modification of criminal tendency through constitutional influences affecting mainly the strength of impulse. The increase of sexual activity in the spring and early summer is, of course, a well-recognised fact throughout the animal world, and appears clearly in Tables II. and III. The figures in the right-hand column show

TABLE II.—*Monthly Distribution of Sexual Crimes and of Conceptions in France.*

	Sexual assaults on adults.	Sexual assaults on children.	Conceptions.
January	7·09	5·57	7·84
February	6·84	5·24	8·02
March	7·82	6·88	7·85
April	7·39	8·56	8·69
May	10·98	10·95	9·21
June	12·67	13·03	9·08
July	10·45	12·42	8·76
August	9·64	11·13	8·25
September	7·93	8·93	8·46
October	6·46	7·29	7·91
November	6·24	4·95	7·89
December	6·49	5·05	8·02

TABLE III.—*Seasonal Incidence of Certain Crimes—Germany, 1883–1892.*

Daily number of offences in each month, if average daily number for whole year were 100.

	Rape.	Wounding.	Wilful damage.
January	64	75	88
February	66	78	92
March	78	78	98
April	103	95	108
May	128	108	*109*
June	144	113	106
July	*149*	118	104
August	130	*133*	104
September	108	124	103
October	90	106	101
November	68	93	99
December	69	78	98

that the number of conceptions is higher in the months of May and June than in any other month of the year; and that rape and indecent assaults occur most frequently in June. It is reasonable to infer from the close correspondence of the statistical movement of these two sets of phenomena that the rise in the frequency of sexual offences depends on the same cause as the increase in the number of conceptions, and that this common underlying cause is a heightening of sexual activity, an increase in the strength of the sexual impulse.

ABNORMALITY OF IMPULSE AND FAILURE OF INHIBITION.

These two points are of immediate interest and significance in relation to the matters which we have to discuss in this lecture; for they illustrate the operation of two factors which play a large part in the conduct disorders of the mentally defective. The inadequate capacity of control which is a temporary condition in adolescence, and is presumably the source of the special criminal proclivity characteristic of that time of life, is, in greater or less degree, a regular and permanent feature in many cases of mental deficiency. And though the impulses of the feeble-minded do not generally exhibit any constant difference, qualitative or quantitative, marking them off from the impulses of normally developed persons, it is not uncommon to observe instances where mental deficiency is associated with an excess or perversion of instinctive activities, leading to criminal acts which seem then to be related more to abnormality of impulse than to failure of inhibition.

Bearing these facts in mind, we shall naturally conclude that mental defect is likely to involve some degree of predisposition to crime, or at all events to some sorts of crime. And this conclusion is confirmed by the fact that the proportion of weak-minded persons is considerably higher amongst convicted criminals than it is in the general population; in this country, for example, it has been estimated that from 10 to 20 per cent. of the inmates of prisons are mentally defective, while in the general population the proportion is supposed to be 0·5 per cent. These estimates, of course, are arrived at by rather rough-and-ready methods, and we need not rate their accuracy very highly; moreover, the prison population is not representative of criminals as a class, but only of convicted criminals, and mental deficiency, if it predisposes to crime, predisposes even more certainly to detection. Still, when full allowance has been made for the conditions qualifying their value, we may take these figures as showing that the proportion of mental defectives is in fact considerably larger amongst people who break the laws than amongst people who obey the laws. This conclusion does not, however, tell us much until we carry our analysis a little further and ascertain with what forms of law-breaking mental deficiency is specially associated.

FORMS OF CRIMINALITY ASSOCIATED WITH MENTAL DEFICIENCY.

Table IV., taken from Dr. Charles Goring's work on the English Convict, gives some information on this point. It shows the percentage of mental defectives

TABLE IV.—*Proportion of Mental Defectives amongst 948 Convicts Classified According to the Nature of their Crimes.*

Offence.	Percentage.	Offence.	Percentage.
Stack-firing	52·9	Burglary	10·0
Wilful damage	22·2	Murder and attempted murder	9·5
Arson	16·7	Rape (adult)	6·7
Rape (child)	15·8	Receiving	5·1
Robbery with violence	15·6	Manslaughter	5·0
Unnatural (sexual) offences	14·3	Coining	3·3
Blackmail	14·3	Wounding, &c.	2·9
Fraud	12·8	Embezzlement, forgery, &c.	0·0
Stealing	11·2		

in a population of 948 convicts, classified according to the nature of their offences. As you will observe, the incidence of mental deficiency varies enormously from one group to another. Amongst criminals convicted of the more skilled offences, such as embezzlement and forgery, offences which for the most part imply intelligence and education—there are no defectives. At the other end of the scale are the

persons convicted of stack-firing—a characteristic exploit of the village idiot—and in criminals of this class the proportion of defectives is over 50 per cent.

It should be remarked that these figures refer to the population of a prison where insane and weak-minded convicts are segregated, so that the proportion of mental defectives recorded is excessive; further, the criterion of deficiency is of very questionable validity. These considerations do not, however, affect the value of the table for the purpose we have in view—namely, to show the relative frequency of mental defect in the several classes of delinquents.

NO PROOF OF INHERENT MENTAL DEFECT IN ALL CRIMINALS.

So far, then, the facts have been gathered that mental deficiency is much more frequent amongst convicted criminals than in the general population, that it is most frequent in criminals convicted of crude impulsive offences such as arson, and that it rarely or never occurs in association with the more skilled forms of delinquency.

Before we pass from this aspect of the question it may be well to point out that in what precedes we have been dealing either with criminals in the mass or with particular groups of criminals, and that the conclusions arrived at tell us nothing whatever about the mental level of any individual criminal. It may seem superfluous to insist on so obvious a truth; but it is evident from much that is said and written on this subject that the fact of mental defect being relatively frequent amongst criminals has given rise to a vague notion that the criminal is, as it were, a sort of alloy of normal humanity, and that, just as every specimen of an alloy contains some base metal, though the percentage of its admixture may vary from one specimen to another, so every criminal is mentally defective, though some may be grossly defective and others only slightly so.

Such a conception of the constitutional factors in crime may be accepted by a priori theorists, or by statisticians with an exaggerated view of the range of action of their analytical methods; but it is quite inconsistent with the facts of ordinary clinical experience, and in these matters it is on the results of such experience—on the critical study of individual cases—that we have to place our chief reliance.

CRIMES OBVIOUSLY DUE TO MENTAL DEFECT.

Turning back, then, to the consideration of this question from the clinical point of view, we note in the first place that the mental defective may commit crime through mere incapacity to realise the consequences of his acts. We have a classic example of this sort in the case of the imbecile who cut off the head of a man as he lay asleep, and explained his conduct by saying that he wanted to see what his victim would say when he woke and found his head missing. Similarly it is not uncommon for weak-minded persons to commit serious acts of arson, apparently from no other motive than the desire to see a blaze. And in many cases where defectives make murderous assaults under trivial provocation, their excessive reaction is due not only to weakness of inhibition, but also to an inability to appreciate the nature and effect of what they are doing. These two factors may also be involved in the crimes of acquisitiveness to which the weak-minded are very prone. In sexual offences—a form of delinquency often associated with mental defect—it is more usually a question of lack of control over the sexual impulse, with possibly in some instances an excessive development of that impulse, the strength of which is notoriously variable within a pretty wide range from one individual to another.

MORAL DEBILITY.

So far we have referred to two psychological elements affecting criminal proclivity in the feeble-minded—namely, lack of intelligence, impairing the capacity to appreciate the nature and consequences of conduct, and lack of inhibitory control, involving inability to restrain and direct impulse. We have now to consider another element to which much importance has been attributed in connexion with crime—the element of moral debility, of weakness or absence of moral sense.

It is unnecessary to enter here upon any discussion concerning the nature and origin of moral emotion; it is enough for our purpose to recognise that the capacity for such emotion, in however slight a degree, is in fact a normal aptitude of man. It is revealed in the feeling of repugnance experienced in regard to conduct which, though safe and profitable, is in conflict with such moral standards as we have adopted instinctively or under the influence of training, this repugnance taking the form of moral indignation when other people's misconduct is in question, of moral suffering or remorse when it refers to our own misconduct. Like other mental attributes, this moral sensibility varies in degree from one individual to another, and in some persons may be conspicuously feeble or entirely absent. When such deficiency of moral feeling occurs in a person of vicious and criminal life, and from its association with other evidences of abnormality may be presumed to be due to an original fault of mental development, we have the condition which has been termed moral imbecility.

In considering the nature and criteria of this condition it has to be observed in the first place that mere absence or deficiency of moral feeling in a criminal is not enough of itself to constitute the condition. Probably no form of crime, for instance, demands a greater degree of moral insensibility than the crime of the treacherous poisoner, but we should not, I think, describe as a moral imbecile, in the ordinary sense of that term, a man who carried out such a crime with skill and deliberation and for purposes of personal advantage. And amongst the law-abiding population, as well as amongst criminals, it is by no means exceptional to find persons of normal or even acute intelligence who appear to have little or no moral feeling. Probably most of us can count amoral persons of this sort amongst our acquaintance; and history abounds in great examples of the type. A deficiency of moral feeling cannot in fact be considered as an abnormal manifestation in the same sense as we may consider a defect of intelligence. In the present stage of human evolution we can hardly assume that a high development of ethical sensibility, any more than a high development of æsthetic sensibility, is an essential element in our conception of the average citizen. Whatever be the origin of the moral sense, it is assuredly not a necessary factor in the adaptation of the individual to his environment in the same way and to the same degree as is the intelligence—even the moral enthusiast must admit that in the struggle for existence a lack of ethical feeling may often be an advantage, while a lack of brains is almost always a drawback.

The moral imbecile, then, is not simply an amoral person; he is an amoral person who presents also some degree of intellectual deficiency; he is a defective whose congenital debility is more predominant, indeed, in the sphere of the emotions and the will, but affects also, to however slight an extent, the sphere of intelligence.

LEGAL INTERPRETATION OF MORAL IMBECILITY.

This, no doubt, is what is meant to be conveyed in the legal definition of moral imbecility—for we have a statutory definition, and not a particularly felicitous one, of this condition laid down for us in the Mental Deficiency Act of 1913. According to the first section of that Act, moral imbeciles are "persons who from an early age display some permanent mental defect, coupled with strong vicious or criminal propensities, on which punishment has had little or no deterrent effect."

This definition is open to the obvious criticism that it seems to suggest, though it does not clearly assert, that the moral imbecile must show indications of permanent mental defect over and above what may be inferred from his incorrigible addiction to ways of

unprofitable perversity. It is quite true that in most instances of moral imbecility some such indications may be found, and that careful and methodical examination will show evidences of intellectual inferiority as well as of ethical debility; but there are many cases where this is not so, and where the proof of mental defect can only be gathered from the whole record and circumstances of the individual's anti-social conduct—from the lack of foresight and judgment which he reveals in his criminal acts, from his failure to appreciate their certain and disagreeable reaction on his own comfort and liberty, despite repeated experience of punishment.

If by "permanent mental defect" the definition means a defect of intelligence that can be made out without reference to the imbecile's aberrations of conduct, then there does not seem to be any good reason for taking him out of the category of feeble-minded persons, and the definition is superfluous. If, on the other hand, the character and incorrigibility of the vicious and criminal conduct can of themselves provide sufficient evidence of intellectual weakness, the separate reference to "mental defect" is misleading and likely to be a source of practical difficulty, and this all the more through the addition of the adjective "permanent" to qualify a condition which, for ought we know in any given case, may be, and, in point of fact, very often is, temporary.

CLINICAL CONSIDERATION OF MORAL IMBECILITY.

It will be more profitable for us, therefore, to put this definition quite out of our minds and, leaving aside all theoretical views, to go back to the consideration of the moral imbecile from the purely clinical standpoint.

What is usually found, then, is that the criminal conduct of these imbeciles is distinguished by the precocity of its appearance, by the variety of its direction, and by its occasionally gratuitous character. The ordinary criminal—I am speaking now of habitual offenders—may start pretty early on his anti-social career, but he does not commonly begin in early childhood, and, as a rule, he is more or less of a specialist in his criminal activities, which are almost always directed to acquisitive ends. The moral imbecile, on the contrary, is generally an incorrigible thief and liar from the time that his physical and mental development will allow of thieving and lying; he is often fiendishly cruel to younger children and to animals; he is precociously vicious in sexual matters; and his subsequent criminal record may include quite a number of different types of offence.

Of course, as the moral sense "is not a simple activity, but the sum of a set of tendencies" (Ribot), the character of the emotional deficiency may vary very widely in different cases, according as one or other of the constituent elements is lacking, or is imperfectly developed; and since, moreover, the form that the impulses eventually assume, and the ideas that become connected with them, are largely influenced by training and circumstance, it follows that the conduct in which moral imbecility expresses itself may exhibit much apparent diversity. In all cases, however, there is the common trait of insensibility in respect of the particular form of moral feeling involved, with an entire incapacity for experiencing shame or remorse. Individuals of this sort may be taught moral ideas, and in fact they are very ready with the names of the nobler emotions when it is to their interest to conceal their defect, but they are incapable of the feelings and impulses related to these ideas; their morality, as Schüle puts it, is purely theoretical.

EPILEPSY: HEAD INJURIES: RETARDED DEVELOPMENT.

Unfortunately, we still lack satisfactory means of detecting and measuring this moral insensibility; ethical discrimination tests, and the theoretical solution of difficult moral situations, are tests of intelligence, not of feeling, and moral imbeciles often respond most brilliantly to them. There are two points of special interest to be observed in connexion with this form of mental deficiency—first, its affinity to epilepsy, as shown by its frequent occurrence in the offspring of epileptic stock, and by the occasional supervention of epileptic fits later in the subject's life; and, second, its apparent relation in some instances to head injuries in childhood. Well-marked cases of true moral imbecility—that is to say, of moral insensibility and precocious vice, with relatively little evidence of intellectual defect—are by no means common amongst criminals; and their rarity is a further argument against the assumption of a specific criminal diathesis as the fundamental factor in anti-social conduct.

Rather more frequent in criminal practice are instances in which a condition somewhat resembling moral imbecility exists during childhood and adolescence, or perhaps about puberty, but is due merely to retarded development and not to permanent deficiency. Homicidal crimes, often with an obvious element of sadist perversion, are occasionally committed by youths in this stage of emotional and moral immaturity; just as in girls it is not uncommon to meet with arson, and, even, though more rarely, with murder, as criminal manifestations about the time of the establishment of the menstrual function.

THE PATHOLOGICAL SWINDLER.

Before leaving this subject, some reference may be made to one particular group of mentally abnormal criminals, who, though their ethical defect is of a less generalised character, may be counted in the category of moral imbeciles—namely, the pathological swindlers. These individuals differ from the ordinary sane impostor in the degree in which their swindling propensities dominate their character and colour all their activities—they are exercising a talent rather than practising a trade—and even under the hampering conditions of prison or asylum life, they will continue to lie and cheat, not merely for trivial advantages but quite gratuitously, when there is no prospect of gain and a practical certainty of detection with the attendant risk of loss of privileges. A similar mental abnormality may be found in certain women criminals addicted to blackmailing and slander.

In pathological swindlers the level of intelligence is generally pretty high, so that, for evidence of their mental debility, we have to rely mainly on the precocity and incorrigibility of their perverted conduct, and on their persistent display of the same tendencies in the absence of intelligible motive. In some instances, also, it is possible to bring out the constitutional character of their unveracity by testing their ability to give accurate evidence. Some of these subjects, for example, when tried with the ordinary method in which the details of a picture or a statement are to be recounted from memory, will distort and amplify the original facts with a most remarkable wealth of fantasy, and with every appearance of conviction as to the truth of their testimony. This test, however, is successful only in a minority of cases.

CRIMINAL RESPONSIBILITY OF MENTAL DEFECTIVES.

To conclude this lecture it remains to refer shortly to the question of the criminal responsibility of mental defectives. Prior to the passing of the Mental Deficiency Act of 1913, a mentally defective person charged with a criminal offence could not be dealt with otherwise than under the ordinary practice of the courts in respect to the plea of insanity—that is to say, if the offender's defect of mind were such as to render him insane so as not to be responsible, according to law, at the time he committed the act imputed to him, the jury could find him "Guilty, but insane," and he would then be detained as a criminal lunatic. If his mental deficiency fell short of that degree, he was held liable to ordinary punishment. And it was in fact laid down explicitly in several judicial decisions that mere mental deficiency does not entitle a jury to return the special verdict under the Trial of Lunatics Act.

The Mental Deficiency Act established a new mode of procedure; under Section 8 of that Act it is pro-

vided that on conviction by a court of competent jurisdiction of any person of any criminal offence punishable in the case of an adult by penal servitude or imprisonment, the court, if satisfied that such prisoner is a defective, may make any order that a judicial authority under the Act may make, or may remit the case to a judicial authority. And the section provides that the same procedure may be followed in the case of children who are liable, under the Children Act, 1908, to committal to a certified industrial school, and also in the case of persons found to be amenable to the Inebriates Acts.

The court may act either on the evidence given during the trial or other proceedings, or may call for further medical or other evidence. Clause 5 of the section lays down that when it appears to the police authority that any person charged with an offence is a defective, they shall communicate with the local authority, and it shall be the duty of the police authority to bring before the court such evidence as to his mental condition as may be available.

It will be observed that these provisions of the Mental Deficiency Act do not apply to persons charged with capital crimes—that is to say, with murder or treason. Defectives indicted for these crimes are dealt with under the ordinary law, and, if the offence is proved, are either found guilty and sentenced to death, or are found guilty but insane and ordered to be detained during His Majesty's pleasure. In practice, the final result is much the same, as adequate evidence of mental deficiency, even if it does not secure a verdict of guilty but insane, will lead to reprieve; and other provisions of the Mental Deficiency Act give power to the Secretary of State to transfer mental defectives from prisons and criminal lunatic asylums to institutions for defectives.

The courts have hardly as yet made sufficiently extensive use of their powers under Section 8 of the Act to establish any large body of precedents, but so far it does not appear that medical evidence regarding mental deficiency in criminal cases will be likely to present any special difficulties. Here, as a medico-legal practice generally, the guiding principle for the medical witness should be to confine himself to his technical rôle, to make sure by exhaustive examination of the case that he is acquainted with all the relevant data, and to advance no opinion that he cannot support by facts.

HAIR-BALLS OR HAIR-CASTS
OF THE STOMACH AND GASTRO-INTESTINAL TRACT.

A REPORT* OF TWO CASES OF HAIR-CAST OF THE STOMACH, WITH AN ABSTRACT OF 108 CASES.

BY IVOR J. DAVIES, M.D. LOND., M.R.C.P. LOND.,
PHYSICIAN WITH CHARGE OF OUT-PATIENTS, KING EDWARD'S HOSPITAL, CARDIFF.

Synonyms.—Hair-ball, hair-cast, hair-mass, trichobezoar or phytotrichobezoar, tumeur pileuse.

Historical.—The condition is a rarity, but is more frequent than is generally supposed; 108 cases have been reported since Baudamant[1] described the first specimen in the literature in the *Journal de Médecine* in 1779. It is probable that unreported cases occur not infrequently in the surgical practice of all large hospitals, which, as Matas[2] suggests, would, if described, swell the statistics very considerably. In recent years several cases have been reported, and much care has been taken in a research of the literature, with the result that a careful analysis of the cases has shown the condition to be almost an entity, for there is a close uniformity of feature in the reports.

We owe much to the excellent contributions of Butterworth,[3] Ledra-Heazlit,[4] Matas,[2] Moore,[5] in America, and to Thurstan Holland,[6] Barclay and Ramsbottom[7] in England, Clairmont and Handek,[8] Huttenbach,[9] Hausmann,[10] and others on the continent. Radiography has proved to be a most valuable aid in diagnosis, as in gastro-intestinal diseases generally.

The term "bezoar" is probably of Arabian origin, being derived from the word "badzehr"; bezoar stones in ancient times were regarded with veneration as remedies against snake poison, plague, leprosy, epilepsy, dysentery, and many other maladies. Dechambre in the "Dictionnaire Dechambre" gives an excellent historical summary, and more recently Burchard[11] presents their X ray relations in a most interesting and valuable contribution to the subject.

Sir Norman Moore, President of the Royal College of Physicians of London, was greatly interested on seeing the specimens, and very kindly gave me the following historical reference from Freind's "History of Physick" (Vol. II., pp. 106 to 108; Avenzoar's account).

"In speaking of a Jaundice, which he supposes was occasion'd by Poison, he orders three barley corns weight (not three grains as some have told us) of Bezoar: the first time I find it used by way of medicine, or any history of it described. His description of it is this: 'That is the best, which is found in the East, near the eyes of Stags. Great Stags, in those countries, eat serpents to make them strong. And before they have received any hurt from them, run to the streams of water, and go into it so far, till it comes up to their heads; this custom they have from natural instinct; and there they continue without tasting the water, (for, if they should drink it, they would die immediately) 'till their eyes begin to trickle: this liquor, which there oozes out under the eyelids, thickens and coagulates; and continues running, 'till it increases to the bigness of a chestnut, or a nut. When these Stags find the force of the Poison spent, they come out of the water, and return to their usual haunts: and this substance, by degrees, growing as hard as a stone, at last, by their frequent rubbing it, falls off. This is the most useful Bezoar of all.' And this account here given by Avenzoar is confirmed by other Arabian writers, who have travelled into Persia and China, where it most abounds. The Author of the book concerning Simples, ascribed to Serapion, erroneously supposes that it grows in some Mines: and to shew the exorbitant value of it, he quotes Abdalanarack as a voucher, that the Palace of Corduba had been given for one of these Stones. Some of the moderns will not allow the Bezoar of Avenzoar to be the same, which has gone under that name in these latter Centuries; because this, according to the best account of the most knowing Naturalists, is always found in the Stomach, or rather Omasum, of the Animal they call Cervicapra. However, I cannot but think, that our Author must mean the same thing though he differs in the account of the place, where it is formed."

Incidence.—Moore[5] states "that the incidence of bezoars or hair-balls in the human stomach might well be used as an argument in favour of evolution, as they are frequently found in animals in the season when the hair is shed, and but rarely give rise to serious symptoms, as they are frequently expelled by vomiting, or passed in the fæces with a thick coating of food particles."

In human beings the hair-eating habit is generally confined to young females, and generally dates from childhood, and has been seen even in creeping children (Harvie[12]). Butterworth[3] remarks "that few cases of trichobezoar are found in German literature, and the habit of hair-eating appears to be more prevalent among the English-speaking people," which has led Bussell to remark that "the eating of hair seems to be a favourite pastime of English women."

Pathology.—The ætiology of the hair-eating habit is probably due to some factor which is peculiar to young females in the adolescent period of life. The causation is generally ascribed to a perverted appetite, but the exact nature of the underlying disturbance is obscure. In only a small number of the cases was insanity present; in these the foreign body usually consisted of a mixture of hair and other material, such as nails, tacks, pieces of wood, and various other substances. Occasionally cotton (with a pin and hook, as in the second of the cases in the present report) or bits of string or wood form a nucleus for

* Read before the Clinical Section, Royal Society of Medicine, on April 8th, 1921.

the hair. The condition may sometimes be due to a continuation of the common habit of childhood of putting anything in the mouth, as is also seen in the thumb-sucking habit in both sexes, which, if not repressed early, may persist for several years. The habit of biting the finger-nails is an expression of a similar condition, but these perversions are usually seen in families of unstable, nervous constitution, whilst no such co-relation appears to be the rule in the hair-eating habit.

Butterworth [3] states: "It is probable that the custom of young girls wearing their hair loose, flowing, and hanging over the shoulders, is an important factor in favouring the establishment of biting the hair, or passing strands through the mouth or between the teeth." An analysis of the cases shows that, as a rule, the hair-eating habit dates from the period when the hair is worn loose and long. It is well known that girls in adolescence exhibit various forms of dyscrasia, or perverted appetite, such as eating chalk, rice, indiarubber, or wood (as in a black lead pencil). A variety of reasons may be assigned for such perversions—e.g., anæmia—which condition, however, is not always present, or the more active metabolic processes of the early years of adolescence in females. Insufficient or improper food may sometimes be responsible for perversion of appetite; the eating of chalk or rice is sometimes intentional, with the object of inducing pallor, which to the mind of some young girls is attractive. In a perusal of the cases, various reasons are assigned by the patients in explanation of the depraved appetite, but the statements throw but little light upon the pathology of the condition. It is a common sight in the poorer districts of any large community to see unkempt women chewing the ends of loose strands of hair, but probably none is swallowed, or hair-ball would be of more frequent occurrence.

The hair is probably swallowed in small masses after being twisted round the tip of the tongue, or after being pulled out by the hand. A condition of anæmia would make the extraction of hair from the scalp more easy than otherwise. Deglutition would be impossible unless the hair was first of all twisted or chewed into a mass, which probably afterwards becomes undone, and the individual hairs are caught in the mucous folds of the stomach, for otherwise expulsion of the mass from the gastro-intestinal tract would be of more frequent occurrence. The hair is gradually worked up again by the gastric movements, until at length it entirely fills and forms a perfect cast of the stomach, with prolongations in some instances through the pylorus into the duodenum, or even into the jejunum, and much less frequently into the œsophagus. (Moore's[5] case, and Knowsley Thornton's[21] case.)

Prof. Arthur Keith at the Royal College of Surgeons of England commented on the special features of the specimens reported by the writer. He referred to Hunter's contribution to the subject as described in Palmer's edition of his works, vol. iv., p. 93. Hunter, by an investigation of the lie of the hair in specimens of hair-cast, made important inferences of the gastric movements, which he showed are "regular" or definite in direction in the various parts of the organ. Prof. Keith showed in the specimens of this report that at the cardiac end the texture showed evidence of a more or less vortical movement, whilst at the pyloric end the movement is more of an onward character. The pyloric extremity of the smaller specimen is almost an exact mould of the antrum pylori, indicating that even here circular, as well as longitudinal movements, occur. These facts suggest that the stomach movements are of a more complex character than is ordinarily supposed to take place in the process of digestion.

A single hair-mass is most commonly present, but the literature includes a few instances of two or three masses of hair accurately opposed to each other by faceted surfaces, or small masses may also be found in the ileum giving rise to intestinal obstruction in some of the reported cases.

Elongation of the stomach is produced more easily than dilatation, and so the hair-ball increases more readily in length than in breadth. Gastritis is sometimes present, and ulceration and perforation of the stomach in several instances. Papillomata of the mucous membrane were present in Best's case,[15] as also in the second case (Mr. A. W. Sheen's) described by the writer. These hair-masses are of variable size, and weigh from a few ounces only, to large casts of the stomach several pounds in weight. In the literature the largest specimen hitherto reported was that of Mermet-de-Hauteville,[13] which weighed about 6 lb. The first of the two specimens now reported weighs 6½ lb., and is thus the largest on record. It is remarkable that digestion is generally so good until the hair-mass completely fills the stomach. In the first of the two cases now reported, except for occasional attacks of dyspepsia, definite disturbance of digestion had only been present for six months prior to operation, when a huge mass of hair completely filled the stomach. It is probable that the mass being compact, and of close texture, absorbs but little of the ingested food which is pressed onwards by peristalsis over the surface of the tumour from the cardia to the pylorus. When a prolongation of hair-mass plugs the pylorus, it is probable that the obstruction is occasionally removed by the displacement of the hair-mass within the stomach, for otherwise urgent symptoms would appear much earlier than is apparent from an analysis of the cases. In the late stage, when the mass is moulded to the stomach walls, the food probably passes most easily along the lesser curvature, as is suggested by the radioscopic appearances of the passage of a contrast meal. Gastric digestion must be very imperfect in cases of hair-cast, and probably digestion is almost entirely performed beyond the stomach, or else nutrition would suffer earlier, and to a greater degree, than is the rule in the majority of cases.

Clinical Course.—It is remarkable, as Butterworth[3] points out, how little the general health suffers considering the duration of the habit. Lædra-Heazlit[4] states that the stomach is exceedingly tolerant of foreign bodies, but eventually rebels when the limit of tolerance is reached. Symptoms ultimately appear, pain, vomiting, alternating attacks of constipation and diarrhœa being the rule, the breath becomes foul, anæmia, exhaustion, wasting follow, and unless the mass is removed, death takes place from inanition, as in (Bollinger's[14] case), perforation of the stomach (Best's case,[15], Ritchie's case[16]), or from intestinal obstruction when the hair-mass is in the ileum (Brewster's case[17]).

Physical Signs.—The hair may be deficient, especially in the temporal regions. The slight disturbance of vigour and of nutrition is a striking feature of the reported cases. In most instances the only abnormal physical signs are those of an abdominal tumour, which is most commonly present in the epigastrium, or extends across the epigastrium from one hypochondrium to the other. The tumour may occupy a lower position owing to gastroptosis, and when this is marked the pylorus may be in the pelvis (Russel's[18] case).

Schreiber[19] remarked upon the spontaneous displacement of the tumour as a valuable point in diagnosis, but this also occurs in other movable tumours. In the second case now reported the tumour was in the right lumbar region, but at the time of operation occupied the left lumbar region. The outline of the tumour was evident in many of the cases, as was also free movement on respiration, and on palpation in most instances, a smooth, well defined, hard, freely movable mass was found. Tenderness as a rule is slight or absent. The shape is variable, being generally rounded or oval, elongated or crescentic, or J-shaped, as in both of the cases now reported. The remarkable range of mobility is probably the most important physical sign in differential diagnosis. An indistinct fine, crackling sensation was elicited in the palpation of Harvie's[12] case, and this was readily made out under anæsthesia.

A sense of crackling or deep crepitation was also elicitated in Moore's[5] case.

Radiography.—The appearances are distinctive, and as this adjunct to diagnosis is now universally adopted in all obscure abdominal affections, the diagnosis of hair-mass of the stomach should now become the rule and not the exception as formerly. Thurstan Holland[6] has given us the first detailed description of the X ray appearances of hair-mass, whilst Ramsbottom and Barclay[7] presented the first case which was absolutely and definitely diagnosed by radiography, and they emphasise the importance of "radioscopic palpation" in association with the screen examination. The continental observers already named in the first section of this paper also made valuable contributions to the radiographic diagnosis of hair-ball.

Mr. Thurstan Holland[6] has very kindly given me permission to reproduce particulars of the two cases

FIG. 1.—Radiograph (Thurstan Holland[6]). The first mouthfuls of the opaque meals spread out to form a cap over the upper end of the tumour.

which are of classical importance in the progress of our knowledge of the subject. In the first case, despite a suggestive picture, an exact diagnosis of the gastric tumour was not definitely made out, although Dr. Barclay, of Manchester, suggested hair-ball.

An exact diagnosis was definitely made in the second case prior to operation. The patient was a girl of 16 years, with a history of a large abdominal tumour for ten years, which at various times had been diagnosed as a tumour of the spleen, liver, or kidneys. Operation was refused as no definite diagnosis was made. For five or six years, "up to a year ago," there had been a constant vomiting of food. This had stopped a year ago, but lately had commenced again. There was no pain, but some tenderness in the upper right abdomen. The tumour presented itself as a large, hard mass, curving down from below the left costal margin to a point below the umbilicus, and then upwards to the right to disappear under the lower edge of the liver. The tumour was freely movable, and when grasped by its lower part could be swung from side to side of the abdomen as if suspended from a fixed point behind the upper left costal margin.

Mr. Holland[6] states "with a vivid recollection of my first case the diagnosis appeared quite certain, and I made a definite diagnosis of hair-ball in the stomach before the X ray examination." The history was then discussed more fully with the mother, and the fact elicited that no one had ever suggested to her any other diagnosis except that of "tumour of the liver, spleen, or kidneys"—these were the mother's own words. "I then asked a direct question. Are you sure that no one has ever suggested to you that the tumour consisted of hair?" The answer was significant. "No. But now that you mention hair, I remember that when she was 4 or 5 years of age she used not only to bite off her own hair, but also, in her sleep, to pick off and chew bits of blanket, &c."

The radiographic appearances were interesting and characteristic:—

(1) "Before any food was given, it was possible to make out the general shape of the tumour on the screen, and to differentiate it from the liver as it was thrown into relief by the gas-distended transverse colon. A plate was taken which clearly showed this." The gas-distended transverse

FIG. 2.—Radiograph (Thurstan Holland). The appearance of the tumour when covered by the contrast meal. Note the gas-distended transverse colon encircling the lower end of the tumour.

colon partly encircled the dark shadow of the hair-mass which almost completely filled the stomach. This localises the gastric area, and excludes the spleen and omentum, as these are outside the colonic loop. The liver can usually be distinguished from the stomach area by a faint darker outline. (Matas.[2])

(2) "The first few mouthfuls of a liquid barium meal remained held up in the cardiac end of the stomach, and spread out as if forming a cap to something inside the organ. (See radiograph, Fig. 1.)

(3) "Shortly after swallowing a breakfast-cupful of the food, the whole stomach was mapped out by what was obviously the barium lying between the walls of the stomach and the mass filling it.

"It was then obvious that an enormous mass—the hair-ball—filled the entire stomach right up to the pyloric end, the **J**-shape being most beautifully shown."

Mr. Newbolt removed a large hair-ball 2 lb. 15 oz. in weight two days later. The patient made an excellent recovery. The radiographs were taken in a standing position, with a 16-inch coil and a Sanax break. The exposure in each case was approximately half a second, an Ilford plate and an intensifying screen being used.

Diagnosis.—(1) This is now mainly one of differentiation of gastric tumour, and for all practical purposes lies between malignant disease and hair-mass. The early age, sex, long history, good health,

and the particular features of the tumour are almost peculiar to hair-mass, and if suspected, and radiographic methods be used in a routine way, then no difficulty should be experienced in the diagnosis of hair-mass of the stomach.

The free mobility of the stomach with the enclosed mass, and of the latter within the stomach as made out by "radioscopic palpation" (Barclay and Ramsbottom [7]) during fluoroscopic examination are characteristic of hair-mass. These observers in their valuable report state†: "By means of palpation, it was easy to demonstrate that it was freely movable within the stomach. The tumour could be displaced, the top of it rising above the level of the bismuth food, and showing as a rounded shadow in the clear air space in the fundus of the stomach. (The 'magenblase' of Clairmont and Handek.[8]) In order to demonstrate the nature of the tumour still more clearly, the fundus of the stomach was distended with CO_2, and into a larger gastric vesicle thus obtained the hair-ball was pushed up. It gave a heavy shadow because of the coating of bismuth it carried up with it."

(2) A history of hair-eating is seldom obtained, even on inquiry in suspected cases. This is probably due to the fact that the habit is for the most part unconscious, for when shown the hair-mass afterwards admission of the habit is usually obtained.

(3) Small masses of hair may be passed per rectum. (Cases reported by Stover [20] and Thornton.[21])

(4) Lavage of the stomach may bring up a few strands of hair. In Paton's case, the diagnosis was suggested whilst the patient was under observation by the doctor's cat vomiting a small hair-ball.

(5) The presence of fatty, acid plates and needles in the contents of the fasting stomach. (Hausmann.[10])

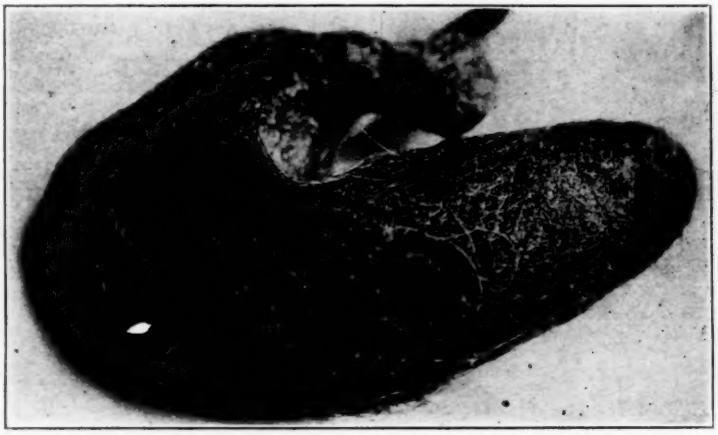

FIG. 3.—Hair-cast (Case 2). Weight 3½ lb., length along greater curvature 21½ inches, plus appendage of 7 inches. Greatest circumference 11 inches. Note the moulding at the pyloric end.

CASE 1.—Mrs. E. P., aged 34. *History.*—She had always enjoyed good health until six months before admission to the hospital, when her lower limbs became swollen; and soon afterwards she observed her abdomen to be swollen, and it continued to increase in size afterwards. She also suffered from breathlessness and palpitation on exertion. Indigestion had been present for some years, but lately this had taken the form of pain and vomiting after meals, with a streaky hæmatemesis on a few occasions. A few days before admission to the hospital the upper limbs had become swollen; and of late headache and sleeplessness were troublesome features. Amenorrhœa had been present for eight months, and for some time previously menstruation had become irregular and scanty. The urine of late had diminished in amount and passed with a little difficulty. The bowels were freely opened with a tendency to diarrhœa. She had three healthy children, the youngest being 1 7/12 years.

Family History.—Unimportant, and the patient had never shown any sign of unsoundness of mind.

Condition on Admission.—The patient was first seen in the gynæcological out-patient department, King Edward Hospital, by Dr. E. Tenison Collins, as an unusual form of pregnancy was believed to be present by the practitioner in charge of the case. Dr. Collins passed the case on to the medical out-patient department, with the remark, "the tumour is a peculiar one, but it does not belong to my department." The woman was somewhat sallow, and showed a moderate degree of œdema of the limbs, and was fairly well nourished. The mental condition appeared to be normal. The tongue was slightly furred; the teeth were deficient and carious. The breath was not fœtid. Heart and lungs—normal. The abdomen was distended, and on palpation was found to be occupied by a large mass extending downwards from the left hypochondrium, across and below the umbilical region and upwards to the right costal margin. The shape was crescentic with a sharp depression on its upper surface. The outline was definite; the surface hard and smooth and free from tenderness. The mass was freely movable in all directions, and pain was entirely absent in manipulation. The normal splenic dullness was present, and merged at the costal margin into that of the mass. The urine was of specific gravity 1020, and except for being high coloured was otherwise normal.

Diagnosis.—This was indefinite, as one recognised that the features were unusual, and did not appear to belong to any known clinical entity. A label had to be given to the condition for the purpose of immediate admission to the hospital. A provisional diagnosis of splenic anæmia was made, but with much doubt, as the only point of resemblance to splenomegaly was the sharp depression on the mass superiorly, with a slight degree of anæmia. The patient was admitted to a medical ward, and afterwards transferred for operation under care of Mr. Cornelius Griffiths.

Progress.—In the ward the idea of pregnancy was revived by the house surgeon, who states: "External ballottement is obtained, and hard parts can be felt per abdomen and are firm and rounded, and are all connected and can be freely moved, apparently in a fluid sac. No fœtal heart sounds can be heard, and no fœtal parts can be definitely made out."

The case excited a great deal of interest, and almost everyone differed in opinion. Mr. Griffiths suggested that the condition was a tumour of the stomach. A moderate degree of secondary anæmia was present.

The radiographic report was as follows: Examination required—? fœtus.

Report.—"Shows no definite shadow. A fœtus does not show in utero."

The radiographer—Dr. Owen Rhys—was not asked to make an examination of the stomach, or the true nature of the case may have been discovered. This case, as well as the second described in the present report, occurred in 1912, and so prior to the contributions of Thurstan Holland and others mentioned in preceding paragraphs. The general state was well maintained over a period of 14 days prior to operation, but vomiting, at first slight, became more marked, especially in the evenings. The bowels on an average were opened three times daily without an aperient, but on a few occasions a simple enema was necessary. The urine was at times scanty, and varied from 4 oz. to 32 oz. daily, and except for an excess of pigment and mucus was free from abnormality.

Operation.

The operation was performed by Mr. Griffiths.

Laparotomy.—4½ inch incision over the right rectus muscle. The stomach was found to be enormously dilated and filled by a compact mass of hair, which formed a perfect cast of the outline of the stomach and pylorus. All other organs were found to be normal.

Weight of the hair-ball on removal—6¼ lb. Length along its greater curvature—24½ inches or 62 cm.; and its greatest circumference was 12½ inches or 31·3 cm.

The superficial hairs varied from 6 to 12 inches in length, and were dark in colour and similar to those of the patient. The mass was thickly covered with a slimy, foul-smelling

† A little manipulation and rotation of the patient quickly demonstrated that the mass displacing the bismuth (showing as a lighter area in the middle of the dark shadow of the bismuth) was actually *within* the stomach.

mucus, together with flakes of a sebaceous or adipocere material. The stomach wall was hypertrophied, and its mucous membrane showed a condition of gastritis in places, and also areas denuded of epithelium having a glistening appearance similar to that of leukoplakia. X ray examination disclosed no foreign bodies within the hair-mass.

The patient bore the anæsthetic and operation well, but an hour later collapsed, and despite energetic stimulation died.

Remarks.

On inquiry from the relatives no history of mental deficiency or of hair-eating was obtained. The hair on the scalp was scanty, but no importance was attached to this fact, and afterwards the nurse in charge of the case stated that the patient on one occasion made the following remark: "I used to have a lot of hair, and have lost it. My hair used to be below my waist—now look how short it is." She volunteered no further information, but if the above remark had been reported by the nurse it is possible that a suspicion of the true condition may have occurred to one of us.

The house surgeon in his note made an important observation, which, although wrongly interpreted, was a correct impression of the free movement of the mass on palpation. He remarked upon "the free movement of the mass apparently in a fluid sac." The most striking impression obtained from the published records of "hair-ball" of the stomach is the free mobility of a hard, smooth mass on manipulation. If this fact is borne in mind then the possibility of hair-ball will be remembered, and a diagnosis can afterwards be definitely established by radiography.

CASE 2.—Mrs. M. E., aged 33. Admitted to the King Edward Hospital, Cardiff, under care of Mr. A. W. Sheen.

History.—The patient was quite well up to three years ago, when she noticed a lump on the right side of the abdomen which gradually got larger. A year later she suffered at intervals from morning vomiting, but never after meals. Occasional slight pain was felt in the swelling. At times the lump appeared to get smaller with the passage of an increased amount of urine.

Previous Health.—Good, except for a temporary mental disturbance of six months' duration a twelvemonth prior to operation, from which she appears to have made a complete recovery. Four healthy children.

Family History.—Unimportant.

Present Condition.—A healthy-looking, well-nourished woman. Heart and lungs normal. On abdominal examination a hard, rounded, smooth, movable, painless lump was found in the right lumbar region, but which did not appear to fill the loin. A dull note was obtained on percussion, but non-continuous with the liver dullness.

Operation performed by Mr. Sheen eight days later. The abdomen was opened by a longitudinal incision on the right side, but the mass was now situated in the left lumbar region, and found to be a hard, movable body within the stomach. A 4 inch longitudinal incision was made in the most avascular part of the anterior surface of the stomach, and a characteristic hair-cast of the organ with a prolongation into the pylorus and duodenum was removed. The stomach wall was hypertrophied. The hair-mass was 21¼ inches or 54·3 cm. in length along its greater curvature, and 11 inches or 27 cm. in its greatest circumference, the appendage withdrawn from the pylorus being 7 inches or 17 cm. in length. The weight was 3¼ lb. A few adherent strands of cotton were seen on its surface, also a hook similar to that shown in the interior on subsequent X ray examination. (Fig. 3.) There was a large papilloma involving the lesser curvature, which appeared to be of an innocent nature, and also several similar smaller tumours over the antrum pylori. These were removed and the raw areas sutured. The usual surgical procedure was followed in the completion of the operation. The patient made a full and speedy recovery, and was discharged 14 days later.

A careful surgical technique is necessary during the removal of the hair-mass, which is frequently in a foul septic condition. Multiple hair masses in the stomach and intestines have also been reported in several instances, as in the case of Ledra-Heazlit,[4] where two operations were performed, the first for the removal of a gastric hair-cast, and the second three days later for ileus, owing to obstruction of the ileum by another hair-mass. Dr. Heazlit[4] emphasises the importance of this fact being borne in mind at the time of operation. In Bell's[22] case there were 11 operations in all for the removal of hair-masses from the stomach and small intestine with recovery. Butterworth,[3] in his analysis of the subject in 1909, collected 42 cases; Moore,[5] in 1914, 53 cases; Ledra-Heazlit,[4] in 1914, 70 cases; and Matas,[2] in 1914, brought the number of cases to 77. These contributors in their valuable papers compiled a careful bibliography of the subject.

The present paper brings the number of cases to 108, the additional references alone being recorded, except for the cases of special interest used for the purpose of illustration.

My thanks are due to Dr. Thurstan Holland and to my colleagues on the staff of the Cardiff Hospital.

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LITERARY INTELLIGENCE. — Messrs. J. F. Lehmanns, of Munich, publishers of the *Münchener Medizinische Wochenschrift*, announce that they have taken over the publication of the *Archiv für Rassen und Gesellschaftsbiologie*, edited by Dr. Alfr. Ploetz. They have also taken over the *Archiv f. Biologie*, edited by L. Frank, M. v. Frey, and E. Voit.

TREATMENT OF SYPHILIS BY INTRAVENOUS INJECTIONS OF MERCURY.

BY J. ERNEST LANE, F.R.C.S.,
SURGEON TO ST. MARY'S HOSPITAL AND TO THE LONDON LOCK HOSPITAL.

THE treatment of syphilis by intravenous injections of mercury was introduced in this country at the Male Lock Hospital in 1895, and in the following year I read a paper on the subject at the Third International Congress of Dermatology held in London, an abstract of which appeared in THE LANCET of Dec. 12th, 1896. The number of cases then brought forward was 76, all of them males, and the number of injections administered was over 1000. I then employed a 1 per cent. solution of cyanide of mercury, the dosage of which was ℥ xx., at first given on alternate days, but later more frequently; the number of injections varied from 46 downwards, but in at least 10 cases the treatment had to be discontinued owing to the difficulties of finding a suitable vein, or at the patient's own request.

In my experience, this treatment was more rapid in its effects than any other method of mercurial administration, painless in comparison with intramuscular injections, and perfectly safe; the only objection I then brought forward was the difficulty occasionally experienced in introducing the hypodermic needle into a vein. The treatment did not for the most part commend itself to the members of the Venereal Diseases Section of the Congress owing to its inherent difficulties, and although its critics were not hostile, they were by means enthusiastic in its favour.

Reintroduction of the Treatment, and its Application to Women.

I did not persevere much with this treatment after 1896 for various reasons, one being that I was shortly afterwards transferred to the charge of the patients in the Female Lock Hospital, and I did not think at that time that women would be suitable subjects for intravenous injections owing to difficulties with their veins; another reason was the introduction at about that time of arsenical compounds which were then coming into vogue. In 1917, finding that my patients at the Female Lock Hospital rather welcomed and looked forward to their injectio s of salvarsan substitutes, and that the difficulty of intravenous injections in women had been greatly over-estimated, I decided to give the treatment a further trial, the results of which have been perfectly satisfactory. The number of women I have now treated amounts to 166, of whom 40 were pregnant, mostly in the early stage; the routine adopted was one injection of one of the salvarsan substitutes and five injections of the cyanide solution per week; the doses of the latter varied with the tolerance of the patient, and it was found that many patients could stand a dosage of 40 to 50 minims, so that they received 200 to 250 minims in the course of a week. The maximum number of cyanide injections given was 110, in a case of very severe and disfiguring frambœsiform syphilide of the nose and face; in 16 cases over 50 injections were given, and in 13 cases 40 or more, and the average number given came out a little under 40; the total number amounted to considerably over 5000. The strictest attention was paid to the hygiene of the mouth, and the occurrence of severe gingivitis or other manifestations of mercurialism was rare, so that under appropriate treatment the injections had seldom to be interrupted for more than a few days; in two cases phlebitis and occlusion of the veins occurred, and necessitated the recourse to other forms of mercurial treatment. Of the 126 non-pregnant women, 82 had a positive Wassermann reaction (W.R.) on admission, and a negative one on their discharge; 30 had a positive reaction on their admission, and also on their discharge, free from all symptoms; the remainder had a negative reaction both on admission and discharge, owing in some cases to the test having been performed before the evolution of the disease, and in others as the result of treatment before admission. Of the 40 pregnant cases, the W.R. was positive in 37 on admission, and negative in 3; of the babies born of these women 36 gave negative W.R.'s at birth, and remained negative until they and their mothers were discharged from hospital free from symptoms. In two cases the W.R. was positive at birth, but was rendered negative by treatment. Two cases of macerated fœtus occurred at about seven months; one infant died of cyanosis and vomiting in 24 hours, one of jaundice in a fortnight, and one at two months of diarrhœa and vomiting. The treatment of the expectant mothers was continued up to their confinement, and was resumed shortly after; they were enjoined to suckle their babies for as long as was deemed expedient, and to present themselves and their offspring for inspection at intervals of two to three months. The average stay in hospital of these patients was about 16 weeks, but many of them continued their treatment as out-patients, and the remainder resumed their ordinary avocations.

Use of the Treatment in France.

Since my reintroduction of this treatment in 1917 I found that it had been strenuously advocated in France by Dr. Thibierge, of the St. Louis Hospital, as recorded in his work, "Syphilis and the Army," published in 1918. He there states his opinion that intravenous injections of cyanide of mercury are superior to all other forms of mercurial administration, and that they constitute an attacking treatment for which no "mercurial preparation suited for the treatment of syphilis in soldiers can be substituted." His plan of treatment in some respects resembles that adopted by me, but he commences with two or three intravenous injections of cyanide of mercury, then one of novarsenobenzol followed in eight days' time by a second injection of that substance; in the intervals between the novarsenobenzol injections an intravenous injection of cyanide of mercury is given daily or every other day; 12 to 15 injections in all, the course lasting from 18 to 24 days altogether. In Thibierge's opinion, if followed by regular treatment by mercurial pills it was sufficient to protect the patient from secondary disturbances.

Conclusion.

In conclusion, I am more than ever impressed with the value of intravenous injections of mercury, given concurrently with one of the salvarsan substitutes, and for the prophylaxis of syphilis I consider it to be infinitely superior to any other routine of treatment. I fully realise that it is not appropriate to the treatment of out-patients in the V.D. clinics, but I am convinced that it is the most reliable method for use in institutions where the patients can be induced to stay until the complete subsidence of all symptoms of syphilis.

For the careful records of these cases I am greatly indebted to my house surgeon, Dr. G. W. Rundle, and to Miss Ashby, matron of the Female Lock Hospital.

THE PEOPLE'S LEAGUE OF HEALTH.—Ten lectures are being given this autumn under the auspices of the League. On Oct. 13th Sir G. Sims Woodhead delivered the first lecture, and eight subsequent lectures will be delivered on Thursdays at 6 P.M. by Prof. E. Collis (Oct. 20th), Dr. W. A. Potts, Dr. Leonard Hill, F.R.S., Dr. Eric Pritchard, Mr. E. B. Turner, Mr. E. Farmer, Mr. Bishop Harman, and Dr. C. J. Bond. These lectures will be delivered at the London Day Training College, Southampton-row, W.C. The last lecture of the series will be delivered by Sir Maurice Craig at the house of the Royal Society of Arts, John-street, Adelphi, Strand, on Wednesday, Dec. 14th, at 6 P.M. The fee for the course is 4*s*. Further particulars may be obtained from the Honorary Organiser, Miss Olga Nethersole, at 7, Hanover-square, London, W. 1.

FOUR GENITO-URINARY CASES

ILLUSTRATING SOME DIFFICULTIES IN DIAGNOSIS.

BY J. W. GEARY GRANT, F.R.C.S. ENG.,
HON. ASSISTANT SURGEON, KING EDWARD VII. HOSPITAL, CARDIFF.

THE following cases well illustrate the difficulties of diagnosis in certain genito-urinary conditions, and also the desirability in any obscure abdominal disease of a complete investigation of the genito-urinary system. X ray examinations, when negative, obviously only exclude such conditions as calculus, and when apparently positive still require verification of their findings by use of the cystoscope and ureteral catheter.

Tuberculous Kidney with Blocked Ureter.

CASE 1.—The patient was a police-constable, aged 30, of fine physique. He was admitted to King Edward VII. Hospital, Cardiff, under the care of Dr. Mitchell Stevens, complaining of progressive weakness and loss of flesh, feeling of nausea but no vomiting, and pain in epigastrium immediately after food. The doctor who sent him to hospital informed Dr. Stevens that in March of 1920 the patient came to him for an attack of pain and difficulty in micturition, and that on that occasion he passed a catheter and drew off about half a pint of muco-pus. Since that time there had been no symptoms referred to the urinary organs. In view of the history Dr. Stevens requested me to make a cystoscopic examination, and this was done on Jan. 1st, 1921. The bladder appeared perfectly normal, except that I was unable to make out any sign of a left ureteric orifice. Indigo-carmine was injected; vigorous jets from the right ureter appeared in 20 minutes, but none from the left. A week later cystoscopy gave the same result. Skiagraphy of the kidney region and of the stomach after an opaque meal gave a negative result. On palpation the left kidney appeared only moderately enlarged. Although the patient's symptoms at that time and for many months previously were referred solely to the stomach, a tentative diagnosis of tuberculous kidney was made; at Dr. Stevens's request, on Feb. 9th I cut down on the kidney, which was much enlarged, the fatty capsule having been converted into a fibro-lipomatous mass of the consistence of cartilage, adherent to the peritoneum and densely adherent to the diaphragm. In endeavouring to get inside Zuckerkandl's capsule, to avoid opening the peritoneum, a considerable perinephric abscess was opened into, discharging thick pus, found afterwards by the pathologist to contain *Staphylococcus aureus* in pure culture. The difficulties of separating this kidney without damage to surrounding structure were enormous. The vascular pedicle, which was very short, was isolated, transfixed, tied with two mass ligatures of stout catgut, and divided, the kidney delivered, and the ureter brought out at the lower angle of the wound. A tear was then found in the peritoneum, in which a small tube was inserted in case the serosa had been soiled, and the peritoneum was then sutured round this and the tube brought out through a separate stab incision. A large drainage-tube was inserted into the upper angle and the wound closed in layers. There was moderate shock, but the patient speedily rallied, and for two days appeared to be doing well. Then hiccough set in, his temperature rose to 100° and 101° F., and signs of broncho-pneumonia with increasing dullness at both bases supervened with distressing insomnia; he died on the tenth day after operation.

The kidney on its removal showed hardly a trace of normal renal tissue, the pyramids were a canary yellow with intervening green and pink patches, the pelvis a narrow slit, and the ureter obliterated. It appears to me that a year ago, when he presented urinary symptoms, there was fairly advanced tuberculous infection of the kidney; the ureter had then become suddenly blocked from tuberculous debris and the kidney ceased to secrete.

Stone in Ureter Simulating Acute Appendicitis.

CASE 2.—A housewife, aged 47, admitted at midnight to the above hospital as a case of acute appendicitis, with a history of three weeks' illness off and on, and one week of acute symptoms, severe abdominal pain, vomiting, and constipation. On admission the pain was referred to the right loin, passing to the groin. There was tenderness over the upper half of the right rectus, and tenderness on deep pressure over the gall-bladder, but none over McBurney's point. I diagnosed acute cholecystitis, and opened the abdomen by a right paramedian incision above the umbilicus. The gall-bladder and appendix were both normal. On passing the hand to the right kidney pouch the kidney was felt to be large and the pelvis distended and very tense. No stone could be felt in pelvis or ureter, and the rest of the abdomen was normal. Abdomen closed. The following day I cystoscoped the patient; urine issued normally from the left ureter, but none was seen to come from the right, and a ureteral catheter passed for 1½ inches when it was arrested. A skiagram showed two minute shadows in the situation of the lower end of the right ureter, which I believed corresponded to the point of arrest of the catheter. All symptoms then subsided. A week later I again cystoscoped her and passed a catheter to the pelvis of left kidney, and then one in the right for 1½ inches, and injected sterile olive oil. I again cystoscoped her on March 1st, when a small stone of a brick-red colour, 1 cm. by 0·5 cm., was seen in the bladder, and a still smaller one in the mouth of the ureter from which it was coaxed by the beak of the cystoscope; both were removed with a Bigelow's evacuator. The larger stone was very irregular, with numerous spicules. Had this case not come in the middle of the night as an acute abdomen it would probably have been further investigated before operation. The patient gave no history of any urinary symptoms, but as she was very deaf and not very intelligent a history was difficult to elicit.

Pain after Gastro-jejunostomy: Renal Stone.

CASE 3.—A dentist, aged about 40, operated on by me for gastric ulcer some two and a half years ago; a large horse-shoe ulcer of the lesser curvature was then found, and as the patient's condition was not very good I performed a posterior no-loop gastro-jejunostomy. He had a severe attack of ether pneumonia, but on recovery from this he left the hospital and had no further trouble, except attacks of bronchial asthma, for two years; he then consulted me on account of a return of all his symptoms. I considered the possibility of the ulcer having become malignant, of a jejunal ulcer or perigastric adhesions, and I advised an exploratory laparotomy; the patient wished to try palliative treatment for a time, but found the pain intolerable, and he was taken into hospital. An X ray examination with the screen showed a "dumping stomach," the meal passing immediately through the anastomotic opening into the jejunum. At operation, except for a few adhesions, the gastro-jejunostomy appeared perfect, the jejunum passed with a gentle curve to the left with no sign of kinking, and there was no sign of jejunal ulcer; the original lesser curve ulcer appeared to have healed, with only some slight induration at its site, and a partial gastrectomy in a patient far from robust did not appear to be warranted. On examination of the rest of the abdomen on the right side a hard body the size of a walnut, evidently a stone, was felt in the lower part of the pelvis of the right kidney. It was impossible to remove it with any degree of safety from a median laparotomy wound, and this was closed. The patient again had a severe attack of ether pneumonia. On recovering from this a skiagram showed an opacity about the size of a shilling in the situation where the stone was felt at the laparotomy. He is waiting until he is in a better state of health to have the stone removed.

The case is remarkable in that he describes his pain as exactly the same as that which he had before the first operation, and refers it to the left side; nothing found at the second operation indicated that this was due to the gastric ulcer or his anastomosis. He has never complained of any urinary symptoms.

Accessory Renal Artery: ? Intermittent Hydronephrosis.

CASE 4.—A girl, aged 16, admitted to hospital March 30th, 1921, gave a history of a sudden attack of severe pain in the hypogastrium in February, with pain across the small of the back, coming on after micturition. Extreme nocturnal and diurnal frequency and hæmaturia for 14 days. Her own doctor diagnosed vesical calculus, and sent her to Dr. Mitchell Stevens, who diagnosed calculus in the left kidney or ureter. On admission no pain, frequency, or hæmaturia; a skiagram showed a shadow, the size of a shilling and very well defined, situated just to the outer side of and below the transverse process of the first lumbar vertebra (left). A second plate a week later showed the same, as also one taken after her operation. On cystoscopy the bladder and the ureteric orifices were normal, and urine came from each. I, however, failed to get a catheter to enter the left. On April 13th I exposed the left kidney and could find nothing resembling a stone in the kidney, pelvis, or ureter, or anything which corresponded to the shadow found in the plate. There was, however, an accessory renal artery to the lower pole, passing behind the ureter at its junction with the pelvis of the kidney, and this I divided between ligatures. Possibly this abnormal polar artery caused an intermittent hydronephrosis with hæmaturia. Kidd and Ransohoff state that hæmaturia, often profuse, may follow temporary occlusion of the ureter in intermittent hydronephrosis.

Commentary.

The first of the above cases is an excellent example of what may be termed silent renal tuberculosis—one of the conditions which should always be borne in mind in any obscure abdominal affection associated with progressive loss of flesh and strength; owing to the absence of the cardinal symptoms of urinary disease it is frequently overlooked. Cystoscopy is quite as essential as an X ray examination. The favourable prognosis of nephrectomy in an early stage, when the disease is unilateral and before secondary infection has supervened, demonstrates the importance of excluding this condition.

According to Straus of Chicago there are six types of primary renal tuberculosis:—

(1) The cystitis type, where symptoms are referred to the bladder, and time is wasted in treating this locally. It is not sufficiently recognised that in men, apart from stone, stricture, and prostatic obstruction, cystitis is, to say the least, uncommon. This type furnishes 40 to 60 per cent.
(2) The renal type, where pain is referred to the kidney with attacks of renal colic, also furnishing from 40 to 60 per cent.
(3) A sudden, severe, and apparently causeless hæmaturia, furnishing 25 per cent.
(4) Stated by Straus to be very rare, a type running a course entirely symptomless, except for albuminuria.
(5) Cases running a symptomless course until a perinephric abscess supervenes.
(6) A type with fever, sweats, and rigors, due to a mixed infection.

As regards Case 2, appendicitis is not unfrequently diagnosed in cases of renal calculus and pyelitis, and these conditions should be excluded before the appendix is attacked. The last case shows the importance of remembering the possible presence of abnormal renal arteries. Eisendrath and Straus found in 200 kidneys examined 4 per cent. of true lower polar arteries, 3·5 arising from the aorta, 0·5 from the left common iliac, and altogether 14 per cent. of true accessory arteries, in addition to those pseudo-accessory arteries arising from a single renal. During any operation on the kidney requiring its delivery the unexpected presence of one of these may give the surgeon a disconcerting interlude in his manipulations, as occurred to me lately in an apparently straightforward nephrolithotomy, when in separating the upper pole of the kidney an accessory polar artery was torn across; the proximal end retracted out of sight, and the smart hæmorrhage resulting was only arrested by gauze pressure until the kidney was delivered, when the bleeding vessel could be found and ligated.

CULTIVATION OF SPIROCHÆTES

ON THE SURFACE OF SOLID MEDIA CONTAINING AN "ESSENTIAL SUBSTANCE."

BY F. W. TWORT, M.R.C.S., L.R.C.P. LOND.

(*From the Laboratories of the Brown Institution, London.*)

IN this investigation no attempt has been made to confirm the work of Noguchi, who has obtained what he considers to be a definite growth of spirochætes, including *Treponema pallida*, on his well-known medium under anaerobic conditions, but rather to obtain, if possible, a good surface growth on solid media in which the changes in form of the spirochætes could be better studied, and which could be used for complement-deviation tests, and for studying the problems of infection and immunity.

Working with the late Mr. G. L. Y. Ingram in 1910, I succeeded in cultivating Johne's bacillus, an acid-fast bacillus allied to the lepra and tubercle bacilli, which infects the intestinal tract of cattle, sheep, goats, &c. This was done by adding to any good medium a small quantity of a certain essential food which we found to be necessary for its vitality and growth and which we found to be stored up in the bodies of allied bacteria such as the tubercle bacilli and *Bacillus phlei*. We found also that this food, which we called the "essential substance," could be extracted from *Bacillus phlei* and allied bacilli by ethyl alcohol, glycerine, &c. These results were first submitted to the Royal Society, before which body they were read in November, 1910, and given in more detail in February, 1912, being also published in the Proceedings of the Society. Further investigations on Johne's bacillus and the essential substance necessary for its growth were published later, but it will only be necessary to mention here the simplest form of the medium used. This was prepared as follows:—

Bacillus phlei was grown on 4 per cent. glycerine-peptone-beef broth. The growth was then collected, killed by steaming, and dried. One gramme of the dried bacillus was ground up with 12 c.cm. of glycerine and 22 c.cm. of normal saline. The emulsion so obtained was autoclaved, and when cool was added to 66 c.cm. of mixed yolk and white of new-laid eggs. The medium was then placed into tubes, sterilised at 61° C. on three successive days, and inspissated in slopes. In place of the saline we often used ordinary peptone-beef broth or a broth prepared with brain tissue instead of beef.

As has been pointed out, on this medium we obtained good growths of Johne's bacillus, and on one or two occasions we succeeded in getting a slight growth of the lepra bacillus of man. The medium also proved to be very good for the cultivation of the diphtheria group of bacilli. Before passing on to the consideration of spirochætes it may be noted that special nutrition substances which have since been found in various foods, and have been named vitamins—substances which are essential to the life and growth of animals and man are probably analogous substances to the essential substance in the bodies of acid-fast bacilli which we found to be necessary for the growth and multiplication of Johne's bacillus.

Results Already Obtained.

Our work has been continued with special reference to these essential substances which are not contained in ordinary laboratory media, but are essential to, or of assistance in, the growth of certain bacteria. Most of this work carried out with extracts of bacteria, seeds, fungi, and other vegetable substances has already been published in our papers on Johne's disease, and it will not be necessary to discuss these in detail here. However, the results with Johne's bacillus indicated the importance of this line of research, and attempts were made to cultivate other micro-organisms on media prepared along similar lines. The experiments with spirochætes had given one definitely positive result when the work was interrupted by the war, and I regret to say that during my absence in 1916 my culture died out; since my return I have been unable to continue the investigation owing to the difficulty of obtaining the necessary material. Under these circumstances it will not, I hope, be out of place to give the results so far obtained, incomplete though they may be. One of the media used in the primary cultures was prepared in the manner already described except that the killed growth of a diphtheroid bacillus was used in place of *Bacillus phlei*, and 3 per cent. of glycerine was used instead of 5 per cent.

The material used in the successful experiment consisted of lymphatic gland tissue obtained from a mouse that had died, a small piece being removed aseptically and placed on the surface of the medium just described. The tube was capped with gutta-percha tissue and incubated aerobically at 37° C. After nine days' incubation a delicate growth was observed round the tissue, and this proved to consist of a pure culture of a delicate spirochæte. Some difficulty was experienced in obtaining subcultures as no growth took place on fresh tubes of a somewhat similar medium in the absence of the gland tissue. Successful subcultures, however, were immediately obtained on the standard egg medium containing 1 per cent. of *B. phlei*. Further experiments showed that better growths were obtained when the egg medium was made with ordinary peptone-beef broth or peptone-brain broth in place of the saline; 1 per

cent. of glycerine was found to be the best quantity to add. On such media the spirochætes grew in small colonies, 1 to 2 mm. in diameter, with a dull rough surface and an irregular outline, and usually they were heaped up in the centre. The colour with young colonies was light fawn, but when older they became a rich brown. Secondary colonies usually appeared in old cultures. These were larger and smoother in appearance, but showed the same rich brown coloration.

The spirochæte stained with Giemsa's stain and by several of the silver methods, but showed no coloration with the ordinary aniline dyes. Growth took place under aerobic conditions, but none was observed in cultures placed anaerobically. Hanging-drop preparation when examined under the microscope revealed marked activity. The motion was swift and straight like a dart, a spirochæte often being scarcely visible until it commenced to slow down before reversing its corkscrew action and darting in the opposite direction. In stained film preparations the spirochætes were found to vary greatly in length, not only with the medium used, the degree of moisture, and the age of the culture, but also in the same film. The turns were fairly close, and varied from 1 to 30 or more in number. A flagellum was not observed, but no special attempts were made to demonstrate one. In older cultures, and particularly in the secondary colonies, the spirochæte forms gradually became much less numerous, and in their place was found a number of round bodies which varied in size from that of a large coccus to that of a small yeast cell. These forms contained a number of fine chromatin granules. Subcultures from these secondary colonies again grew typical spirochætes, but the growth at first was often small, indicating that many of the round forms were dead; it is possible that they represented degenerative changes. On the other hand, it is also possible that the round forms may need some further stimulus before they produce the original twisted forms.

Further cultivation experiments showed that no growth took place in ordinary peptone-beef broth or on agar media. Negative results were also obtained in milk and on serum media. When inoculated into a flask of glycerine broth on which *B. phlei* was growing there was growth with turbidity. Growth also took place in glycerine beef broth on which an acclimatised Johne's bacillus was growing. In this case the masses of Johne's bacillus were broken up with the production of a marked alkaline reaction and a foul odour. After a short time, however, the spirochæte was acclimatised to grow—but with some difficulty—on an egg medium containing no *B. phlei*. No growth took place in broth media containing 10 per cent. of fresh sterile rabbit's blood, and after 24 hours' incubation at 37° C. the spirochæte was found to be dead. If, however, such media were previously incubated for 48 hours before inoculation, there was definite growth with hæmolysis. In such media the spirochæte grew exceedingly small, and was found to pass a Berkefeld filter, one drop of the filtrate giving a fair number of colonies on the surface of an egg medium containing *B. phlei*. Colonies, however, did not usually appear until after from three to five days' incubation.

Animal Experiments.

Small quantities of a culture were inoculated into the vein of a rabbit and pigeon and subcutaneously over the back of a mouse. The rabbit and pigeon gave negative results. The mouse at first showed no symptoms, but when observed seven weeks later it was found to be weak and to have developed several open sores on the back. The animal was killed. Films from the sores showed a large number of various micro-organisms, but no spirochætes could be found. In order to avoid the contaminations, cultures were taken from the deeper tissues beneath the sores. Contaminating bacteria, however, grew in large number, and the spirochæte was not recovered. No cultures were taken from the internal organs, as it was intended to inoculate other animals. Unfortunately, as I have pointed out, the work was interrupted by the war, and all my cultures died out. Since returning I have been unable to obtain any more infected mice, or any uncontaminated syphilitic material to test for the cultivation of *Treponema pallida*. Whether or no this micro-organism will grow on similar media or on similar media with slight modifications I am therefore unable to say. This, I suggest, should be tested, as should also the possibility of cultivating such organisms as that found by Noguchi in yellow fever. The possibility of using cultures like the one I have described for complement-deviation tests and immunity experiments should also be investigated.

In conclusion, I may mention that the spirochæte to be found in the stomach of normal cats and dogs failed to give the slightest evidence of growth on the special media, under either aerobic or under anaerobic conditions. Certain delicate vibrios and spirilla from soil and water, however, grew well on these media, and when dead *B. phlei* was added to a plain water-agar medium, it was easier to isolate some of these micro-organisms. The growth of certain amœbæ and flagellates was also good on such media.

I regret that circumstances should have made it impossible for me to complete this research, but I hope the results given here may prove of assistance to others workers in the same field.

THE ACCURACY OF THE FORMALIN AND SACHS-GEORGI TESTS FOR SYPHILIS

AS COMPARED WITH THE WASSERMANN REACTION.

BY W. NEAVE KINGSBURY, B.SC. LOND., M.R.C.S., L.R.C.P. LOND.,
ASSISTANT PATHOLOGIST TO THE MIDDLESEX HOSPITAL.

(*From the Bland-Sutton Institute of Pathology.*)

SINCE the discovery of the Wassermann reaction (W.R.), a number of tests have been put forward from time to time as substitutes, but few, if any, have withstood carefully controlled comparative tests against it. The following observations were undertaken in order to ascertain the diagnostic value of two of the more recent syphilis tests—namely Gaté and Papacostas' formalin test and the Sachs-Georgi (S.G.) precipitation test. No attempt is made to discuss the theoretical aspects, the series having been carried out from the point of view of practical utility.

The Formalin Test.

The accidental discovery in 1920 by Gaté and Papacostas that the addition of a small quantity of formalin to pooled syphilitic serums produced coagulation and was without effect on normal serums forms the basis of this new test. In their original communication Gaté and Papacostas[1] state that two "drops" of formalin should be added to 1 c.cm. of syphilitic serum to produce coagulation. The indefinite volume of a "drop" necessitated a preliminary investigation to determine the optimum quantity of formalin to be employed. A pipette cut to No. 53 Stubbs wire gauge was used, and the addition of one drop of formalin, standardised to contain 30 per cent. of formaldehyde, to 0·25 c.cm. of serum, was found to give good results. A series of experiments was also carried out to confirm the optimum temperature for the reaction, room temperature being recommended by Gaté and Papacostas. Temperatures ranging from 0° C. to 56° C. were tried. It was found that if coagulation was complete at any one temperature, variation in temperature had little effect. If, however, the addition of formalin resulted in some slight increase in viscidity only, the change was perhaps slightly better marked at room temperature than at the extremes of the range. In view of these results room temperature

was adopted. The diameter of the test tubes is of importance; half inch diameter tubes were employed. Readings were taken after 24 hours and results ranging from complete coagulation to slight increase in viscidity were recorded as positive. The test was carried out on 261 serums.

From the table it will be seen that only 43 per cent. of the serums giving a positive W.R. showed a positive formalin test, and that 9·5 per cent. of serums giving a negative W.R. gave a positive formalin test.

The Sachs-Georgi Reaction.

It was pointed out in 1910[2] that extracts of various organs gave a slight precipitate when added to syphilitic serum. The precipitate was, however, found to be inconstant, and was therefore considered of little diagnostic value. In 1918, Sachs and Georgi[3] called attention to the fact that the addition of a solution of cholesterol to alcoholic heart extract made a good antigen for a precipitation test. The precipitate was claimed to be definite and constant in cases of syphilis. The antigen employed in the following series was that recommended by Taniguchi,[4] which is practically identical with that of Sachs and Georgi, and consisted of 20 parts of 10 per cent. alcoholic heart extract, 10 parts of absolute alcohol, and 1 part of 1 per cent. alcoholic solution of cholesterol. This was rapidly mixed with an equal volume of saline and allowed to stand for 15 minutes. The mixture was then rapidly diluted with twice its volume of saline.

The method adopted for the test was that recently described by Taniguchi.[4] Four tubes were used for each serum, three containing respectively 0·025, 0·05, and 0·1 c.cm. of serum to be tested, each made up to 1 c.cm. with saline and 0·5 c.cm. of diluted antigen added. The fourth tube was a serum control and contained 0·05 of serum made up to 1·5 c.cm. with saline and sufficient alcohol to give the same alcohol dilution as obtained in the other tubes after adding the antigen—namely, 1 in 18. The addition of this small quantity of alcohol here serves a dual purpose; it inhibits the growth of organisms which might otherwise occur, and causes some precipitation of proteins from the diluted blood serum, which by comparison aids in distinguishing between a non-specific and a slightly positive result. With each batch of serums positive, negative and antigen controls were carried out. The tubes were incubated for 24 hours at 37° C. in accordance with Sachs and Georgi's later experience.[5] It is possible to read the results immediately, but if the tubes be allowed to stand for an hour at room temperature after being removed from the incubator the flocculation becomes better marked. The reaction was carried out on 252 serums.

The results were read (++++), (+++), (++), (+) and (—) according to the amount of flocculation present in the tubes. As is the case of the W.R., zone reactions occurred in which the tube containing 0·1 c.cm. of serum would be slightly positive and those containing 0·05 c.cm. and 0·025 c.cm. strongly positive. With the W.R. such results are a rarity, but with the S.G. test they are met with some frequency. The great difficulty encountered in reading the results was to distinguish between a weak positive (+) and the slight pseudo-flocculation given by some negative serums—a point which is well illustrated by Table I. When all the S.G. results read as positive—i.e., (++++) to (+) inclusive—are included, the number of cases giving a positive W.R. which also gave a positive S.G. test is 95·5 per cent. of the total positive W.R.'s. The ratio of the negative results, however, is not so good. If (++++), (+++), and (++) are considered as positive, and cases giving (+) only are included with the negative results, the number of cases giving a negative W.R. and a negative S.G. is 97 per cent. of the total negative W.R.'s, but the proportion of the positive results is poor.

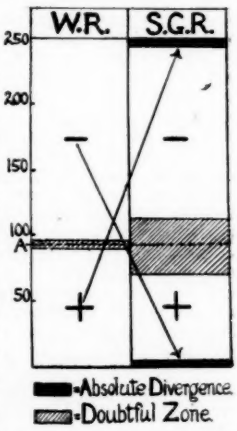
TABLE I.

Test.	Number of cases.						Percentages.		
Wassermann reaction	+	+	—	—	Partial positive.	Partial positive.	Wassermann and new test agree.	Ratio of pos. W.R. and pos. new test to pos. W.R.	Ratio of neg. W.R. and neg. new test to neg. W.R.
New tests	+	—	—	+	+	—			
Formalin test (261 cases) ..	42	56	142	15	2	4	72	43	90·5
Sachs-Georgi reaction (252 cases) — Taking (++++), (+++), (++), and (+) as positive	87	4	129	26	2	4	88	95·5	83·5
Sachs-Georgi reaction (252 cases) — Including (+) with the negative results	70	21	150	5	1	5	89·5	77	97

In calculating percentages the cases showing a doubtful Wassermann reaction have been omitted. The Wassermann reactions were carried out by the Fildes and McIntosh technique.

Table II. is a graphic representation of the results. The blocked areas indicate complete divergence of the test—i.e., positive W.R. with absolutely negative S.G. reactions, or vice versa. The shaded areas indicate a "positive incomplete" or "negative trace" result in the W.R. and a (+) only in the S.G. columns. It must be pointed out, however, that of the six serums represented by the shaded area in the W.R. column, one only falls within the adjacent shaded area in the S.G. column, the remainder gave negative (four cases) or strongly positive (one case) S.G. reactions.

TABLE II.—*Comparative Results of Wassermann and Sachs-Georgi Reactions.*



A = One case only was doubtful to both reactions. Of the remaining five doubtful W.R.'s, four were negative S.G. and one strongly positive S.G.

Conclusions.

The results obtained from the formalin test prove once again the futility of basing conclusions on figures derived from a small number of cases, as small series have recently been published showing complete concord between formalin and W.R. results. The technique of the test is simple, and were the results reliable it would be an excellent method whereby the practitioner could rapidly establish a diagnosis of syphilis. But less than half of the serums giving positive W.R.'s shows coagulation with formalin, and—a fact of yet greater importance—nearly 10 per cent. of non-syphilitic serums give a positive result. Any claim to the reliability of the test is therefore demolished.

As regards the S.G. test the results obtained are distinctly promising. The technique is much simpler than that of the W.R. on account of the omission of the complement and other constituents of the hæmolytic system. But this is rather more than balanced by the great difficulty of determining the

presence or absence of a precipitate in many instances. A strongly positive S.G. reaction may be taken as evidence of syphilis, but a weak reaction must at present be looked upon with suspicion because of the difficulty in distinguishing between the weakest positive reaction and the slight precipitation given by some negative serums. It appears possible, however, that the detection of the weakest positives may be made easier by modification of the antigen and by special methods of reading the results.

The writer is indebted to Prof. James McIntosh for many useful suggestions during these investigations.

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Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF DERMATITIS HERPETIFORMIS.

BY A. REITH FRASER, M.D. ABERD.,

VISITING VENEROLOGIST, NEW SOMERSET HOSPITAL, CAPE TOWN; LATE MEDICAL INSPECTOR OF VENEREAL DISEASES, UNION GOVERNMENT OF SOUTH AFRICA.

DERMATITIS herpetiformis is a rare disease, characterised by the chronic recurrence of papules, vesicles, or bullæ, which may appear on any part of the skin, with a tendency to herpetic-like grouping. These are associated with intense itching and burning, which may be prodromal or concurrent. This group of eruptions was originally described in England by Tilbury Fox under the name of hydroa, but it is generally known by the title which Duhring gave it in 1884. The cutaneous picture is very variable, and the multiformity of the eruptions considerable. The blood picture shows a characteristic eosinophilia, and indicanuria is a frequent abnormality in the urine. The course is intractable and treatment purely symptomatic; there is no specific remedy. A case, therefore, which responds to any line of treatment may be of assistance in determining the handling of these cases which are peculiarly persistent and recurrent.

The patient was a South African male who had lived all his life in various parts of the Union. His family history presented no points of interest. He was not nervous as a child and he was healthy until the age of 11, suffering only from the usual zymotics. At this age began the first of a long series of vesicular, papular, and bullous eruptions, which continued for the next eight years without very much remission, with increasing severity, and at steadily decreasing intervals. The earlier attacks were described as consisting of numerous clusters of small vesicles affecting chiefly the lower lip, the hands, the inner aspects of the knees, and the soles of the feet. At first the interval between attacks varied from six weeks to three months, and the vesicles disappeared spontaneously in a few days. As the boy grew older the interval between attacks steadily diminished, and the vesicle clusters persisted for longer periods. There was also an appreciable prodromal period, characterised by headache, fever, and general malaise. The boy was something of an athlete, playing games and running well in the short distances at school sports. Such exercise invariably precipitated a severe attack which was worst on the soles of the feet. When riding he always noticed that "a crop of blisters" appeared on the inner surfaces of both knees and thighs within a very short time.

He led an open-air life. At the age of 17 he went to work on a farm, and was out of doors all day in the heat of the African sun. While he kept fairly fit in a general way these attacks steadily became more frequent, more severe, and of longer duration. His general health and physical fitness were gradually undermined. He had moved up country from the coast by stages, and was now living at an altitude of some 4000 feet above the sea-level. He received all kinds of treatment during these years, but the effect on the incidence and severity of the attacks had been negative. An autogenous vaccine had been made from the contents of the vesicles and he received many injections without effect. Meanwhile he had grown into a tall slimly-built youth, naturally athletic, but severely handicapped by his condition. As he grew older he noticed that the attacks caused him to feel miserable and off colour, and he indulged in sports with considerable trepidation. The self-consciousness caused by the unsightly appearance of the face went to increase a naturally retiring disposition, and the endless succession of eruptions became a real burden and obsession to the patient.

At the age of 19 he came under my observation, and when I saw him first he had just had an attack in full swing. He was ruddy in complexion and severely sun-burnt, tall and lanky, of athletic build, and weighed 150 lb. He was inclined to be constipated, and had a suspicion of pyorrhœa alveolaris. He complained that all his endeavours to regulate his bowels were unavailing. The following is his description of the onset of an attack: "When an attack is brewing I feel depressed, probably because I am aware of what is in store for me. Small red spots appear which cause irritation. Sometimes I think I feel feverish, but this may be imagination. After a few days the red spots develop into blisters which grow larger and are fully developed about the third week. While the blisters are growing they burn and itch with a throbbing sensation. The places usually involved are exposed parts and the soles of the feet, on all scratches and cuts whether exposed or not, and on the lower lip and inside the mouth. The upper lip is never attacked."

The lower lip was most seriously involved. There were large vesicles about the size of a lentil interspersed with multiple smaller pea to pin-head vesicles. The lip itself was swollen and protruding, and the surrounding inflammation intense. There were numerous small vesicles on the buccal surface of the lip and cheek. The vesicles remained discrete except at one point, where they had coalesced and formed a large multilocular bulla. On the dorsal aspect of both hands and extending towards the wrists were several small clusters of small vesicles standing out on apparently healthy skin. On the inner aspect of the left knee, however, the skin base was urticarial. On the soles of the feet the skin seemed normal and the vesicles, though clustered, were discrete. One or two large circinate bullæ of tough structure with considerable internal pressure were evident. The contents of the vesicles were not autoinoculable. Those on the soles of the feet were sterile, but those elsewhere were contaminated by secondary organisms. Considerable pustulation took place on the knee lesions, and on the lip there was much eczematisation. The urine was normal throughout, and the temperature did not rise at any time when under my observation. The following is the differential blood count: Polymorphonuclears, 55 per cent.; lymphocytes: large 13·5 per cent., small 29·5 per cent. = 43 per cent.; mononuclears, 0·5 per cent.; eosinophiles, 1 per cent.; basophiles, 0·5 per cent. The red cells were normal in colour, size, and shape. There was no eosinophilia.

The attack subsided in three weeks' time. There was much scarring from previous eruptions on the thighs and knees. The lower lip seemed indented and parchment-like, after the attack had passed off. The patient was advised to give up his work on the farm for a time, and if this had any influence on the frequency and severity of the attacks, to give it up entirely. He was counselled to keep out of the sun as much as possible and wear a large-brimmed sun helmet at all times. Violent exercise was interdicted, but mild tennis was allowed in the cool evenings after a time. These instructions were carried out most faithfully. Diet was modified only to the extent of eliminating obviously indigestible foodstuffs.

Further treatment consisted of weekly intramuscular doses of colloidal manganese. The initial dose was 0·5 c.cm. and was very soon increased to 1·5 c.cm. There was no further attack for four months. At this time, on the occasion of a public holiday, the patient sought permission to go riding on a picnic excursion. This was given after warning him of the risks of precipitating an attack. He was anxious, however, to try how much risk he might run with impunity. On this occasion he was out in the broiling sun for 12 hours. Most of the time he was riding a restive horse. After sundown he played tennis, and subsequently went to a dance where he performed vigorously for many hours. Within four days one or two tiny vesicles appeared on the lower lip, and also on the soles of both feet. They did not develop, however, and had disappeared completely in a few days. The prodromal itching and burning were very slight.

With this sole exception there has been no further attack within eight months of leaving the farm and taking weekly injections of manganese. The patient's health has improved out of all recognition, and he is no longer inclined to be constipated. He has grown and put on weight in the most astonishing manner. He now stands 5 ft. 10 in

and weighs 183 lb. His general outlook on life is much brighter, his disposition more cheerful and gregarious, and he has adopted his new life full of hope that his freedom from these distressing attacks may be permanent. The diagnosis is dermatitis herpetiformis.

20/9/21.—The patient has now been free from his skin complaint for nine months.

The chief points of interest in the case are these: (1) The early age of onset; (2) the intractable nature and increasing severity of the condition; (3) the absence of any nervous or other predisposing diathesis; (4) the precipitating action of sunlight and exercise; (5) the absence of eosinophilia; (6) the response to change of life from an outdoor to an indoor one, protection from the sun, and the administration of colloidal manganese; and (7) the mildness of the only attack which occurred during treatment.

It is hard to say how much of the improvement was due to the manganese, but this part of the treatment seems entitled to a considerable share of the credit. The change of living conditions interdicting severe exercise and exposure to the sun's rays is considered an important factor.

A NEW TREATMENT FOR CHRONIC CERVICITIS AND ENDOMETRITIS.

BY G. W. RUNDLE, L.R.C.P. & S. EDIN.,
HOUSE SURGEON, LONDON LOCK HOSPITAL FOR WOMEN.

WITH the exception of vesiculitis in the male there is no more difficult condition in medicine to treat than cervicitis and endometritis in the female. Though the lesions are primarily caused by the gonococcus, by the time the patients present themselves for treatment, in the great majority of cases, mixed organisms of a secondary nature only are found. In the cases subjected to treatment—they numbered 100—the gonococcus was found in 11 before treatment, and in none at its termination or later. These chronic vaginal discharges resist the orthodox treatments in a very persistent manner; consequently we experienced considerable satisfaction when we found that intramine pessaries stopped these discharges and at the same time healed erosions if present. The pessaries contain 1 per cent. of intramine (di-ortho-diamino-thio-benzene) in a stearine base. One is inserted per vaginam every night for about a month. In the test cases no other treatment was instituted, though we have found it advisable in a further series of cases—as it reduces the incidence of dermatitis—to prescribe a douche the following morning of a solution (1 in 1000) of either zinc sulphate or of zinc sulphanilate.

All the cases were treated as in-patients and kept under observation for some months afterwards as out-patients, being examined clinically and bacteriologically once a month. The oldest case is of 15 months' duration, and the youngest of four months' duration. An improvement in all cases was noticed at the end of the first week, when the patients invariably informed us that the discharge had stopped. Eight cases developed a local dermatitis, which immediately reappeared when the pessaries were prescribed again after an interval of a few months. Two cases relapsed clinically but not bacteriologically and cleared up again with another month's course. The dermatitis is due to the sulphur; it commences with itching of the vulva, and then the mucous membrane swells, a large quantity of lymph being exuded. The lesion may stop at this, or may spread to produce an erythema on the adductor region of the thighs. The inflammation rapidly subsides under calamine lotion. Intramine in the form of pessaries is quite painless, though in the form of suppositories it cannot be employed. That there is considerable absorption by the uterus of drugs inserted per vaginam is proved by the readiness with which the conjunctivæ become discoloured when picric-acid tampons are placed against the cervix for a few nights.

I wish to thank Mr. J. E. R. McDonagh for allowing me to publish these cases.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

WAR SECTION.

A MEETING of this section was held on Oct. 10th; Sir JOHN GOODWIN, Director-General A.M.S., was in the chair, and delivered his presidential address on

The Aftermath of War with Reference to the Medical Service of the Army,

in which he briefly reviewed some of the steps taken since the Armistice with regard to the Army Medical Service. On the cessation of active operations in 1918-19, he said, a necessary period of reconstruction in the army began. As regards the R.A.M.C., amongst the most pressing and self-evident desiderata were: the release of temporarily commissioned officers in order that the requirements of the civil population might be met; the closure of hospitals in order that expenditure might be reduced and that public buildings, &c., used as military hospitals might resume their normal functions; arrangements for the organisation of a satisfactory dental service for the army; a bringing up to date of all orders, regulations, war establishments, &c., so that these might be in accordance with modern requirements and with the lessons of the war; and the re-institution of classes of instruction for officers and men, schools of instruction having been closed at the outbreak of war, and the necessity of post-graduate and other education being now very evident.

Difficulties to be Overcome.

One of the difficulties in the way of attaining these ends was war weariness; after four and a half years of war everyone was tired, and many were almost worn out with incessant work, anxiety, and responsibility. Then, again, death and retirement had removed many able and distinguished officers. The urgent need for economy soon became evident; no measure which involved more than a minimal expenditure could be entertained. Moreover, an enormous expenditure of time and energy was required for the personal interviews, letters, &c., which had to be dealt with daily, the private and Parliamentary questions which had to be answered, and the criticisms—generally kindly, sometimes merely destructive and ill-informed—which had to be met.

Measures taken in Hand immediately after the Armistice.

At the time of the Armistice there were more than 364,000 military hospital beds in the United Kingdom alone; at present there were under 8000. An Army Dental Corps had been established and is doing excellent work. We had now more than 60 commissioned dental officers in the army, and a large number of other ranks employed as dental mechanics. Committees were formed to deal with the many questions relating to the amendment of existing regulations as to establishment, strengths of units, nature and scales of hospital equipment, stores, &c. The late Sir William Babtie, V.C., head of the chief committee, threw himself wholeheartedly into the work; on his death it was carried on by Major-General S. Guise Moores, and the labours of the committee were now completed.

The compilation of the official history of the war was begun under the editorship of Sir William Macpherson; the position as regards the Medical History of the War was as follows: The first volume of the General History, dealing with the medical services in the United Kingdom, garrisons overseas, and the Colonial expeditions, was now being bound for issue; the second volume, dealing with the medical services in France, would be complete early next year. The first volume of the "Diseases of the War" was almost ready for issue,

and the first volume of the "Surgery of the War" was complete in galley proof, and the second volumes of both these works were only awaiting a few chapters; the "Surgery" was practically complete. The material for the volumes on the hygiene of the war would be prepared for press by Sir William Horrocks early next year. The volume on pathology was not, so far as the material in the office is concerned, very far advanced, but ten of the subjects had been written up, and the MS. was in the office. There was no indication as yet with regard to the volume on statistics, and it is doubtful whether complete statistics would eventually be obtained for all periods of the war and for each area of operations.

R.A.M.C. Training.

It was felt that officers stationed in the provinces had frequently not the facilities for obtaining clinical experience afforded to those who were near London; the large provincial hospitals and infirmaries were therefore approached in the matter with very satisfactory results. Over one hundred officers had since the war passed through the post-graduate classes at the R.A.M.C. College, Millbank; 59 officers passed as "distinguished" in various subjects. It was hoped that all these officers may in the future obtain appointments as specialists in the subjects in which they have specialised. In addition, several officers presented themselves for examination in higher degrees, with good results. An important recent concession had been the grant of an initial sum of £220, with a subsequent annual grant of £450, for the purpose of establishing professional libraries in all our larger hospitals in order that officers might have at hand the most recent works for reference. Helped by this grant every military hospital at home and abroad might have an adequate and up-to-date library. Directorates in Hygiene and Pathology were established in 1918 under Colonel W. W. O. Beveridge and Major-General Sir William Leishman. The work carried out by these directorates was of untold value to the army. The posts of consultant in medicine and consultant in surgery had now been estabilshed: these appointments would—as in the case of the directorates just mentioned—normally be held by officers of the rank of full colonel. Should a more junior officer be appointed he would hold the temporary rank of full colonel with the pay and allowances of that rank. With regard to all these appointments—viz., Directors of Hygiene and Pathology and Consultants in Medicine and Surgery—one very important point was that should any officer holding one of these appointments come up in due course for promotion to the rank of major-general, he might be so promoted as supernumerary to the establishment of major-generals and continue to hold his appointment. Consequently the rank of major-general was now open to officers who specialised in pathology, hygiene, medicine, or surgery.

R.A.M.C. War Museum.

The R.A.M.C. War Museum had been the subject of an immense amount of discussion and correspondence, which had at last resulted in a really satisfactory solution. The Treasury had given a sum of £7500 to the Royal College of Surgeons of England, and that body had generously agreed, for this sum, to house, maintain, care for, and complete the preparation of the entire pathological collection of war specimens, and also certain selected facial and orthopædic exhibits.

SECTION OF SURGERY: SUB-SECTION OF ORTHOPÆDICS.

A MEETING of this section of the Royal Society of Medicine was held on Oct. 4th, Mr. E. LAMING EVANS, the President, being in the chair.

Fibrous Osteitis.

Mr. W. H. OGILVIE showed a case in which subperiosteal resection of the humerus had been performed for fibrous osteitis. The patient, a boy aged 3½ years, had been an in-patient in Guy's Hospital during March, 1921, on account of an increasing swelling of the right upper arm of six months' duration, causing no pain or disability beyond slight limitation of voluntary abduction at the shoulder. A skiagram showed a cystic expansion of the bone indicative of myeloma or simple cyst. At the first operation the swelling was exposed subperiosteally and a portion of the outer bony wall removed. The interior contained a reddish material and bled freely. It was thoroughly scraped out, and the cavity swabbed with perchloride of mercury solution. The pathologist's report was that the material formed part of a fibrous osteitis with numerous giant cells resembling those of a myeloma. After the operation the swelling of the arm continued, and three months afterwards an X ray report stated that the cystic expansion had increased both vertically and in circumference, although attempts to fill the cavity with new bone were observed. A second operation was performed on June 23rd, 1921. The whole length of the humerus was exposed and 6½ inches of the bone resected subperiosteally. This included the whole cystic area, and was found on examination to contain a small portion of the upper epiphyseal cartilage. It had been intended to replace this by a bone-graft from the tibia, but the patient's condition did not permit of this, and he was returned to the ward after the periosteum and skin had been sutured. The boy developed broncho-pneumonia, and no treatment of the arm was possible for ten days. On the sixteenth day, when the arm was examined, it was found to be firm on its whole length, and a skiagram taken two days later showed a definite shadow occupying the whole gap. The arm was then placed in a position of right-angled abduction and massage given. At the end of six weeks the bone had regenerated with half an inch of shortening and a full range of movement in both the shoulder and elbow, except for slight limitation of extension at the latter, due to scar, which is now keloid. Mr. Ogilvie, in demonstrating the case, discussed the pathology of the condition with regard to its intermediate position between a simple granuloma and a myeloma. He personally called the case one of fibrous osteitis.

Mr. R. C. ELMSLIE said he had seen three similar cases cured by curetting, and preferred the term fibro-cystic disease since it did not imply a new growth. He considered that bone-grafts in these cases merely acted mechanically as a means of keeping the bone straight whilst regeneration took place.

Mr. H. LAWSON described a similar case, which he had observed for some time. The condition was not causing any disability and was apparently not progressing. He asked the advice of members as to whether operative treatment should be advised.

Mr. W. T. G. PUGH advised radium treatment for the keloid, and stated he had found it successful in a similar case.

The PRESIDENT remarked that this case illustrated well why bone-grafts in children were so successful.

Bilateral "Snapping" Hip.

Mr. H. A. T. FAIRBANK showed a case of bilateral "snapping" hip in a child, being a further report in a case already shown. On the former occasion the President in commenting on the case said he had cured a similar case by rest in plaster. The worse hip, the right, was operated on in December last, when the tendinous formation described by Wood Jones was observed on the deep aspect of the gluteus maximus, although it was not well developed. A flap of periosteum was turned forward from the posterior aspect of the great trochanter and this tendon stitched beneath it. By this proceeding the femoral attachment of the muscle was prolonged upwards to the top of the trochanter: the other hip was put in plaster in slight abduction. When seen in July last the patient had had no recurrence of the snap in either hip.

The PRESIDENT reported a similar case in whom the snap was produced by stimulating electrically during operation. He personally had not seen the monkey-like prolongation of the tendon of the gluteus maximus tendon described by Wood Jones.

Mr. ELMSLIE reported a case in which he had cured the hip-snapping as far as standing position was concerned, but the patient could now snap the hip when sitting.

Subluxation of the Hip.

Mr. FAIRBANK also showed a case of subluxation of the hip of doubtful origin. The case was first seen seven years ago, when she complained of a swelling of the hip and some pain, and limped on walking. There was slight limitation of abduction, but otherwise movements at the hip-joint were normal. A radiogram showed the head of the femur to be slightly flattened and displaced outwards on the neck of the femur. The upper part of the acetabulum was fluffy, with an ill-defined lip. The case was treated on a modified double Thomas hip-splint, with the legs in abduction. Owing to the war he lost sight of the case shortly after; but he saw her again in January of this year, when the swelling of the hip was more obvious and there was definite limitation of abduction. Trendelenburg's sign was now present, and there was ½ inch of shortening. A recent radiogram shows the neck of the femur shortened and definitely anteverted, and an enlarged and flattened head articulating with the upper lip of the acetabulum. The picture resembled that seen after reduction of a congenital dislocation, or more rarely that of a congenital subluxation, but he regarded the case as one of arthritis of unknown origin.

Sir HENRY GAUVAIN said the case did not seem to him to suggest a tuberculous or inflammatory condition, and he was inclined to think the case was a congenital deformity.

Mr. T. H. OPENSHAW thought the condition was not congenital, as the head was too big. He considered it probable that it was a form of arthritis following an injury to the epiphysis, and thought no treatment would improve the condition.

The PRESIDENT agreed that the case was not congenital, and thought Mr. Openshaw's theory was probably correct.

Bilateral Absence of Radius.

Mr. G. R. GIRDLESTONE showed a case of bilateral absence of the radius. When first seen both hands were in a position of right-angled radial deviation which he had treated by gradual extension of the contracted tissues by plaster. He discussed the question of a stabilising operation later on, and suggested splitting the lower end of the ulna and wedging the carpus into the gap or a lateral bone-graft to replace the absent lower end of the radius.

The PRESIDENT commented on the fact that absence of the radius was more common than absence of the ulna. He also inquired whether Mr. Girdlestone thought his lateral bone-graft would have any chance of surviving.

Mr. W. R. BRISTOW considered that periods of physical treatment by massage, &c., should be combined with periods of stretching by plaster, and thought that the question of operation depended on the amount of use which the child could make of the hands.

Mr. GIRDLESTONE, in reply, agreed that alternate periods of fixation and massage were desirable. In reply to the President he said that he thought any graft operation would be successful where the graft had a definite function to perform.

Mr. ELMSLIE showed a case of

Contracture due to a Burn,

causing great deformity and loss of function, cured by a plastic operation and illustrated the method which he had employed. The case was treated after operation by a cock-up splint and massage.

Paresis of Musculo-Spiral Nerve after Dislocation of Radius.

Mr. P. B. ROTH showed a case of old dislocation of the head of the radius in a man of 38 years, causing paresis of the musculo-spiral nerve. When first seen the dislocation was of 20 years' standing, but the pain in the elbow of which he then complained was of only six months' duration. The pain was in the radial side of the hand, and getting worse. On examination the head of the radius was found dislocated forwards in such a manner as to lock against the lower end of the humerus and to prevent full flexion. A radiogram showed also curvature of the neck of the radius, making the head more prominent, and an old united fracture of the shaft of the ulna. A diagnosis of pressure on the radial nerve by the head of the radius was made, and for this condition he had removed the head of the radius. Nine and a half weeks after the operation the patient stated that all symptoms had disappeared and he has now resumed his work.

Mr. FAIRBANK thought that the head of the radius should not be removed from a young child. He had seen disastrous results follow such an operation.

Mr. ELMSLIE also reported a case in which the patient was extremely dissatisfied with the result of removing the head of the radius in an attempt to improve function.

Mr. ROTH also showed a case of

Congenital Radio-ulnar Synostosis

after operation in a boy of 10 years. When first seen the left forearm was fixed in complete pronation so that the hand was practically useless. A radiogram showed a congenital synostosis of the upper ends of radius and ulna. An operation was performed during June of this year, and the bony union divided and the forearm put up in plaster in complete supination. After a few days the position had to be altered to one of mid-pronation on account of pain, and this position has been retained, although there was now very little movement of pronation or supination.

The PRESIDENT said he was unable to convince himself that any movement at the superior radio-ulnar joint was now possible.

Mr. FAIRBANK considered operation in these cases hopeless from the point of view of obtaining movement.

Mr. GIRDLESTONE said that he had found it very difficult to retain movement in these cases, and he thought that if an arm which previously had been in a position of full pronation was put up in full supination after operation, a grave risk of ischæmia was incurred.

Mr. BRISTOW agreed with the President as regards the absence of movement, and suggested that any other cases operated on for this condition should be shown.

Mr. J. H. ARMISTEAD reported a case which had promised very well at first, but the bones had now fused together, and he could only regard the final result as a failure.

Mr. ELMSLIE suggested that the reason for failure in these cases was that the two most useful supinating muscles, the biceps and the supinator brevis, are both attached to the mass of bone which forms the synostosis.

Mr. GIRDLESTONE had only seen one case where free excision of the upper part of the radius had resulted in a movable forearm, but in this case the forearm was flail, and the final result by no means an improvement on the original condition.

SECTION OF OBSTETRICS AND GYNÆCOLOGY.

A MEETING of this section of the Royal Society of Medicine was held on Oct. 6th, Prof. HENRY BRIGGS, the President, being in the chair.

Exhibition of Specimens.

Dr. MALCOLM DONALDSON showed a specimen of Malignant Disease of the Cervix Uteri associated with a malignant omental cyst.

The PRESIDENT showed a specimen of Green Intraperitoneal Exudate found covering the middle third of the back of the uterus during the operation of Cæsarean hysterectomy, performed for obstructed labour with signs of failure of the fœtal heart. The patient had a fibroid which had been symptomless and undiscovered until the fifth month of pregnancy when one day's acute abdominal pain occurred without fever or vomiting. The pain gradually subsided, and she was in bed for three weeks. Prof. Briggs thought it an open question whether this pain did or did not correspond to the early stages of the exudate. The exudate resisted complete detachment; its texture was organically cohesive; its organisation was feeble, and its thickness was a quarter of an inch. Prof. W. Ramsden of the biochemical department had reported the absence of bile pigment and the presence of hæmoglobin or hæmatin; he had since remarked that alkaline hæmatin when diluted acquires a green colour. Dr. R. A. Hendry had examined the specimen and described an organising blood clot with a shell of lutein tissue and granules of pigment, indicating a condition of some long standing, and Prof. Ernest Glynn agreed with Dr. Hendry. Prof. Briggs said that the child was asphyxiated and collapsed at birth but recovered, and the health of both mother and child is now good.

Large Hæmatoma of the Vulva following Labour.

Dr. H. J. MCCURRICH then read a paper by Dr. J. D. BARRIS and himself on a case of Hæmatoma of the Vulva following Labour. The case was reported on account of the unusual size of the hæmatoma.

The patient, a married woman, aged 35 years, had already borne three children without complications. Labour occurred before admission to hospital. The doctor who attended her stated that the fœtal head was on the perineum when he arrived; forceps were not used, the perineum was not torn, and the placenta came away shortly after without abnormal hæmorrhage. One and a half hours afterwards the patient experienced great pain between the thighs and bled slightly. Her doctor was summoned and found a large hæmatoma of the vulva. Later in the day the pain was so severe that he gave her an injection of morphia and sent her to St. Bartholomew's Hospital. On admission at 8 P.M. the patient was blanched, temperature 97·4° F., pulse 96. The left labia, majus and minus, and the left half of the perineum were markedly distended by a purple shiny oval swelling, the left labium minus being stretched over the centre of the swelling as an œdematous band. The swelling was 9 in. by 4½ in., tensely elastic, but not markedly tender. There was slight blood-stained oozing from the vagina, but the surface of the swelling appeared intact. Under gas and oxygen anæsthesia an incision 1½ in. long was made just internal to the labium minus, and 18 oz. of blood clot were evacuated. No bleeding-points were found. The cavity was irrigated with hot saline and lightly packed with gauze. Prophylactic doses of sensitised streptococcal vaccine were given, and the patient made an uninterrupted recovery, being able to nurse the child. Three months later the patient came up and reported that the scar had not caused dyspareunia or any other inconvenience.

Dr. CLIFFORD WHITE said he had seen a similar case, but in that instance the hæmorrhage began 36 hours after labour. This case was also treated successfully by incision, packing, and pressure.—Dr. A. LAPTHORN SMITH said that he had recently attended a case in which a varicose vein of the vulva ruptured giving rise to severe external hæmorrhage.

Dr. R. A. HENDRY read a paper on

A Case of Prolonged Gestation.

He said that the interest in cases of post maturity aroused by a recent law suit[1] was his reason for reporting the case. The patient had had four children, the last 18 years ago, and three abortions. Her husband went to Australia in 1913, and returned to Liverpool, his native city, four years later as a sergeant in the Australian Forces. He spent the night May 14th to 15th, 1917, at home and then returned to his unit. Six months later the patient came to the clinic and was found to be six months pregnant. She was again examined Dec. 18th, 1917, when the uterus was the size of a seven months pregnancy. She attended the clinic again on March 19th, 1918, a month overdue, and was not delivered until April 8th, 1918—328 days after coitus, and 361 after the last menstruation. The midwife informed Dr. Hendry that labour was normal; there was no excess of liquor amnii and the baby was of normal size—it weighed 7 lb. 14 oz. on seventeenth day when it first came to a welfare centre.

Criticism in Dr. Hendry's view might lie in various directions: (1) errors in observations; (2) causes of discrepancy between the size of uterus and the gestation history; (3) lack of corroboration of observation. On the first count a 280-day gestation terminating on April 8th, 1918, would have begun on July 2nd, 1917. Nov. 20th would be 20 weeks later and Dec. 18th 24 weeks; so that on this supposition a 20 weeks uterus must have been taken for a 27, and a month later a 24 weeks uterus for a 31. A double error of such magnitude was, he thought, unlikely. On the second count, hydramnios and twins might be excluded, and no suggestion of a fibroid was ever found. The third possible source of error, lack of corroboration, was practically inevitable in the circumstances.

The PRESIDENT thought that oversize would not account for most cases of prolonged gestation.—Dr. HENDRY said he had noticed in some cases a correlation between prolonged gestation and oversize.

Dr. FRANK NYULASY (Melbourne) read a paper on

Polypoid Decidual Endometritis,

illustrated by epidiascopic and microscopic illustrations and naked-eye specimens. Dr. Nyulasy said that it was a disheartening and almost humiliating discovery to find by the Registrar-General's report that puerperal mortality in England and Wales was greater in 1919 than in any year since 1908. One important cause of puerperal septic infection appeared to be quite generally overlooked—polypoid decidual endometritis. This disease was first mentioned by Virchow in 1861 under the name of "endometritis decidualis polyposa vel tuberosa." Since Virchow's time Gusseron, Strassman, and others had recorded odd cases associated with abortions, but the condition had been generally regarded as a pathological curiosity of extreme rarity. Dr. Nyulasy contended from his own observations that the disease was not uncommon though often unrecognised; that it was associated with full-time labours and not only with abortions, as hitherto recorded; and that it is a not uncommon cause of septic infection with its resulting consequences. In cases occurring in full-time pregnancy the placenta, or a portion thereof, might be found adherent to the diseased decidua; but on the other hand, it might come away apparently complete, leaving behind masses of polypoid decidua which might undergo septic infection, and if not promptly removed lead to the death of the patient. Polypoid decidual endometritis was a result of pre-existing chronic endometritis beginning prior to, or coincidently with, pregnancy, and continued into the puerperium, during which acute processes were grafted upon the old chronic condition in consequence of septic infection. Evidence of chronicity was shown by the fact that in many cases the condition was found to be syphilitic in nature, as evidenced by the history and the microscopic findings. An extreme degree of endarteritis obliterans, which was essentially a chronic process, was always found in such cases. With it there was often considerable organisation of the immense thrombosed capillaries and new formations of fibrous and muscular elements. The flattened, elongated, venous spaces were mostly empty except for a few blood corpuscles, and were lined with a single layer of endothelium in places undergoing active proliferation. Decidual cells, rounded, oval, polygonal or flattened, were found in some specimens over fairly large areas, often separated by bands of muscular and fibrous tissue or forming "decidual islands." Signs of recent inflammatory reaction were chiefly shown by small round-celled infiltration, small extravasations of blood, and active endothelial proliferation. In some sections a few villi were found attached to the polypoid tissues. The masses of

[1] THE LANCET, August 13th, p. 357.

chronically inflamed decidua often left behind by the placenta were favourable beds for the development of septic organisms. Polypoid decidual endometritis was neither a hypertrophic nor an adenomatous condition as was formerly taught, but was a combination of chronic endometritis and metritis exaggerated by pregnancy and usually showing the signs of acute inflammation grafted upon the old chronic condition as the result of sepsis in the puerperium. Syphilis was one cause of the condition and possibly chronic gonorrhœal infection might be another.

Dr. Nyulasy urged practitioners to submit for microscopic examination the material removed as retained products of conception after labour or miscarriage, as polypoid decidual endometritis would, in his opinion, be found to be of much more frequent occurrence than was suspected. As to symptoms, the patient might appear to be doing well for a day or so, but usually there was a slight rise of pulse, then of temperature, which might rise to 103° or 104° F. on the third day. There might be free bleeding after labour, but profuse secondary hæmorrhage was not common, though a sudden free flow after the passage of a normal amount for two or three days was suggestive. Diagnosis depended on the presence of subinvolution, a patulous os usually admitting two fingers, and in the uterus a mass of varying size usually covered with blood-clot, together with the symptoms described. Prognosis depended on the virulence and dosage of the infecting organisms and the tissue-resistance of the patient, but chiefly on the promptitude and efficiency of the removal of the polypoid masses after labour or miscarriage. Practically every case recovered if the operation was done early, but if this were delayed the danger was extreme. As to treatment, early and complete removal of the infected polypoid masses was essential, and from the third to the fifth day was the best time for interference. The major part should be removed by the fingers, but the remainder, which might extend right down to the external os, might be cleaned off with a large-looped sharp curette. Dr. Nyulasy said that the fingers alone might be used if the operation could be performed satisfactorily by this means.

Dr. AMAND ROUTH said he had been struck by a description of Virchow's specimen in a book which he reviewed 30 years ago. He was surprised that more had not been heard of this important condition, and he complimented Dr. Nyulasy on the care with which he had prepared his material for this paper.—Dr. A. E. GILES pointed out the importance of the condition from the medico-legal point of view. It had been a natural but in many cases evidently an unfounded assumption that portions of tissue of polypoid form removed after delivery were placental in character, and were, therefore, to be considered as having been overlooked. It would now appear that in justice to the attending practitioner such tissue must be microscoped before a dogmatic opinion was expressed.—Dr. J. S. FAIRBAIRN thought that many of the figures and sections demonstrated by Dr. Nyulasy showed merely necrotic decidua, and thought that more proof would have to be adduced before the condition could be labelled as syphilitic.—Dr. BARRIS said that he also had felt masses in the decidual site, but he could not feel satisfied that they were polypoid decidual masses. He wished to protest against the use of the curette so soon after labour.—The PRESIDENT inquired whether those septic cases which did well with intra-uterine douching were to be considered as polypoid decidual endometritis. He also felt that curettage was dangerous within 12–14 days after delivery.

Dr. NYULASY, in reply, said he thought that the condition began at or before conception. As regards removing the polypoid masses, he usually employed his fingers, but sometimes had been compelled to use a curette on account of the large area of endometrium involved. He then employed a sharp curette as he thought this caused less trauma. He thought that 3–5 per cent. of all pregnant uteri exhibited the condition, but he could not say what proportion of septic cases were due to polypoid decidual endometritis.

Reviews and Notices of Books.

SANITARY LAW AND PRACTICE.

A Handbook on Public Health. Fifth edition. By W. ROBERTSON, M.D., Deputy M.O.H., Edinburgh; and CHARLES PORTER, M.D., M.O.H., Metropolitan Borough of St. Marylebone. London: Sanitary Publishing Co., Ltd. 1921. Pp. 758. 18*s.* 6*d.*

A BOOK on the subject of sanitary law requires frequent revision to keep it abreast of the times, owing to the passing of new enactments and the issue of fresh regulations and circulars by the Central Health Authority. There is little change in the general plan of the fifth edition of Robertson and Porter's handbook, which first appeared in 1904. The various Acts and laws relating to public health in England and Wales, Scotland and Ireland, are condensed and conveniently arranged under different headings to facilitate study. But the book is more than a guide to the Public Health Acts, because not merely are the laws and regulations explained, but practical suggestions on the usual methods of administration appropriate to each branch of the subject are given. This is of great advantage to the student, as the working aspect of sanitary administration is rather neglected in most text-books on public health. In the present edition we cannot find any reference to the Port Sanitary Authorities (Infectious Diseases) Regulations, 1920, and are surprised that regulations of such importance to port sanitary authorities and their officials in connexion with the prevention of the introduction into this country of infectious diseases from abroad should have been omitted.

Certain of the statements made on the subject of vaccination call for comment. The authors express the view that, so far as their experience goes, vaccination is not being efficiently carried out, and add:—

> "It is only necessary to examine the arms of children to become convinced of this fact. It is rare to find more than two marks in any case, and very commonly only one mark can be found. Very commonly, also, instead of finding foveated marks nothing but cicatrices are to be seen. It is not common that any individual mark is of an area of half an inch square, as recommended by the Royal Commission on Vaccination."

Possibly the authors' experience of vaccination relates, for the most part, to conditions found in Scotland, where "one mark vaccination" is still commonly practised. Public vaccination in England and Wales is, of course, performed by public vaccinators appointed by the boards of guardians. Their work, which is carried on in accordance with instructions issued by the Ministry of Health and under the supervision of the Central Health Authority, generally attains to a high standard of efficiency. The public vaccinators are instructed to aim at producing four vesicles or groups of vesicles having a total area of half a square inch on the eighth day after the operation has been performed. We are not aware that the Royal Commission on Vaccination recommended that each individual mark should be of an area of half an inch square, though they did state on p. 99 of their final report that:—

> "We think it may fairly be concluded that where the vaccine matter is inserted in three or four places it is more effectual than when introduced into one or two places only; and that if the vaccination marks are of an area of half a square inch, they indicate a better state of protection than if their area be at all considerably below this."

It will be noted that the Royal Commission suggest that the three or four vaccination marks taken together should be of an area of half a square inch. It should also be noted that there is considerable difference in the meaning of the terms "half a square inch" (used by the Commission) and "half an inch square" (employed by the authors of this book).

PSYCHO-ANALYSIS AND THE WAR NEUROSES.

By DRS. S. FERENCZI, KARL ABRAHAM, ERNST SIMMEL, and ERNEST JONES. London: George Allen and Unwin, Ltd. 1921. Pp. 69. 7s. 6d.

THE psychological study of the war neuroses in this country has established certain of the claims made by psycho-analysts; the unconscious motive and the processes of repression and of symbolisation by symptoms were found constantly to occur, and treatment by reviving the memory of forgotten incidents (the "cathartic" method of Breuer and Freud) was found to remove the associated symptoms. These successful results are, however, regarded sometimes as disproving the fuller Freudian theory, especially the principle that the primary repressed wish, ultimately responsible for the neurosis, is always of a sexual nature. Writers on the war neuroses accept psycho-analytical views in varying degree, but psycho-analysts themselves have written very little on the war neuroses. Dr. Ernest Jones suggests the cause when he says that he has made an intensive study of only some half a dozen cases (this was in 1918), and does not know of any others that have been investigated by the psycho-analytical method.

"Psycho-analysis and the War Neuroses" gives the views of leading psycho-analysts as expressed at a congress at Budapest, and in a paper by Dr. Ernest Jones which was read at the Royal Society of Medicine. In a short introduction Freud admits the difficulty of bringing the traumatic neuroses into his ætiological conception, but declares that if war neuroses have not shown the sex theory to be correct, yet that is quite another matter from showing that it is incorrect. Dr. Ferenczi traces the controversy concerning the mechanical theory of traumatic neuroses. He gives himself the pleasure of repeating a suggestion that some of the high-sounding names originated by Oppenheim should be rescued from oblivion by being used as test-words in disturbances of speech, and sums up the result of the controversy in the sentence, "By degrees a marked silence fell over the mechanistic school." He is satisfied that an advance has taken place in the attitude of leading neurologists towards the teachings of psycho-analysis.

Dr. Abraham contrasts the man who is repeatedly wounded, and yet retains his mental stability, with another who suffers a mental breakdown after a trifling stimulus, and seeks an explanation of the contrast in the regularity with which the war neurotics were already labile people, especially as regards their sexuality. He states that the symptoms observed in anxiety cases are similar to those seen in the impotent man or the frigid woman, and expects a similarity also in internal processes. A diminution of sexual potency in traumatic neurotics had been noted by all taking part in the discussions.

The symptomatology of the war neuroses is explained on a non-sexual basis by Dr. Simmel, who describes cases in which tics, paralyses, or contractures represented terrifying episodes, the memory of which he restored under hypnosis or by dream exploration: his methods are the same as those described by English writers. But in cases which he has investigated more deeply as to predisposition he finds quite frequently "threads that lead down to the primordial network of infantile sexuality." An attitude of "father defiance" is found in those soldiers who broke down solely under the pressure of discipline.

Dr. Ernest Jones's contribution is, like the others of the series, polemic; he points out that the individual incidence of the war neuroses demands the assumption of other factors besides the strain of war conditions, and that the denial of unconscious mental conflicts by those who have not used some method which gives access to the unconscious is like a denial of the details of histology by those who have never looked through a microscope. Although some symptoms—e.g., dread of shells—may be coloured by war experiences, no symptom occurs that is not met with in the neuroses of peace, a fact which suggests that similar agents must be at work in both cases. He describes the main principles of the psycho-analytical theory of the neuroses as (1) their volitional origin; (2) the unresolved intra-psychical conflict; (3) the unconscious wish: (4) the influence of older unresolved conflicts; and (5) the primary unresolved wish, which is always of a sexual nature. In the primary unresolved wish he finds the source of morbid anxiety, which he distinguishes from real, or objectively justified, fear; the man whose libido has been repressed, whether that libido is directed to an outward object or inwardly as self-love, possesses, in the fear arising from that libido, the potentiality of an outbreak of anxiety in time of stress. Dr. Jones sees no need for psycho-analysis in the majority of cases, but regards a training in it as of the very highest value in treatment; psycho-analysis is necessary when the condition has passed over into a peace neurosis and become consolidated.

The book may be accepted, both by friends and opponents, as an authoritative presentation of Freudian doctrine.

OPERATIVE SURGERY.

Second enlarged English edition. By Prof. VICTOR SCHMIEDEN and ARTHUR TURNBULL, M.B., Ch.B. Glasg. With Foreword by Prof. BIER. London: Baillière, Tindall and Cox. With 436 illustrations. Pp. xx.–350. 25s.

BOOKS on operative surgery can be divided into two main classes, those written for students and those prepared for the practising surgeon. The former are supposed to give the student an insight into the principles of operative technique, whilst the latter furnish full details for the surgeon who may have to undertake any operation upon the living subject. Prof. Schmieden's book is a student's text-book intended to serve as an accompaniment to a course on operative surgery. It deserves the success which it has attained in that it is one of the few readable treatises on the subject, describes a suitably representative series of operations, and is furnished with a useful collection of illustrations of clear but not too complicated a nature. It is satisfactory to see that the customary over-elaborate descriptions of the many types of amputation and of the ligature of arteries have given place to a more concise account of this section of the subject.

British teachers may reasonably object to Prof. Schmieden's disparaging remarks about Syme's amputation at the ankle, and to his advocacy of a method of intestinal anastomosis utilising but one row of sutures. We find it difficult to understand why in a course intended for students the hand trephine should be referred to almost as a thing of the past. A large number, if not the majority, of British surgeons still use the hand trephine. It is astonishing to notice that a posterior incision in the middle of the popliteal space is preferred to a lateral incision for ligature of the popliteal artery. The authors might with advantage have described more fully the operation of ligaturing piles and have made some reference to the inguinal operation for femoral hernia. The book is well produced and easy to handle.

Manual of Operative Surgery. Eighth edition. By JOHN FAIRBAIRN BINNIE, A.M., C.M. Aberd., F.A.C.S. London: H. K. Lewis and Co., Ltd. 1921. With 1628 illustrations. Pp. 1311. £3 3s.

THE editions of Binnie's Manual seem to follow one another very rapidly—a sure indication of its usefulness and popularity. This is no book for the student—for we do not think that even a senior student should do more than refer occasionally to such an exhaustive treatise—but essentially one for the practising surgeon to keep by him for constant reference. The author is eclectic yet catholic. His breadth of view has its drawback in that the inquirer may sometimes feel at a loss as to which of the many suitable methods he should adopt; but whilst including nearly all possible

operations there follows as a rule some wise advice as to choice of method. In this edition the many recent advances in thoracic, abdominal, and plastic surgery have been incorporated. In the section dealing with plastic operations on the nose the author has not sufficiently emphasised the importance of putting an epithelial lining to any flap used to remake the nose. Unless this is attended to a shrunken and unsightly nose results. It is surprising that the name of Lotheissen is not mentioned in connexion with inguinal operation for femoral hernia. In the section dealing with hepatic abscess the author does not seem to have adapted the technique in accordance with more modern views. Even in a book on operative surgery it would be wise to point out that most liver abscesses are due to the *Entamœba histolytica*, whose destruction is assured by treatment with emetine. Moreover, the pus in such an abscess is aseptic, and to pack the cavity with iodoform gauze is totally unnecessary. The less the cavity is meddled with the better, so long as room for the exit of the debris is assured. Aspiration of a liver abscess, when accompanied by the employment of emetine, is a successful method which should receive recognition. The section dealing with subphrenic abscess is inadequate for a book of this size. To give 20 pages to rhinoplasty and six lines to subphrenic abscess is surely to show a lack of proportion. The many types of subphrenic abscess are approached by different routes which should be specified. Room could easily be made for this by cutting out a few of the rarer operations.

However, in spite of minor deficiencies the Manual is indispensable to every practising surgeon.

EARLY DIAGNOSIS OF THE ACUTE ABDOMEN.

By ZACHARY COPE, B.A., M.D., M.S. Lond., F.R.C.S. Eng., Surgeon to Out-patients, St. Mary's Hospital, Paddington. London: Henry Frowde and Hodder and Stoughton. 1921. Pp. 223. 12*s.* 6*d.*

ALL surgeons have realised the difficulty in diagnosis associated with acute emergencies within the abdomen. In this little book Mr. Cope deplores the growing tendency to shirk the issue after the preliminary recognition of an acute condition, and to leave the actual lesion to be discovered at operation. No apology is needed for the repetition and emphasis of the axiom that correct diagnosis is an essential preliminary to correct treatment, or that neglect to make a careful and exhaustive examination is the factor most likely to cause unnecessary delay in operative treatment. More things are missed by not looking than by not knowing, and the memory of this teaching has spurred many a weary practitioner to a fruitful search in apparently unlikely directions. Mr. Cope gives a good description of the methods of investigation that should be employed with every variety of acute abdominal condition and the help afforded by accurate differentiation of types of pain and vomiting is carefully explained. The section on the examination of the patient is none the worse for the fact that there are one or two points on which other surgeons may not agree with Mr. Cope. In testing hyperæsthesia of the skin most neurologists believe that pinching a fold of the skin elicits not true superficial tenderness but deep sensibility. This difference of method may account for the fact that the areas of superficial tenderness here suggested for certain diseases are not in accordance with those usually found. For instance, the area of superficial tenderness described by Mr. Cope as diagnostic of a distended appendix is placed just to the right of the umbilicus; whereas the researches of Head and Sherren have located it over the right Poupart's ligament; most surgeons would agree that true superficial tenderness as elicited by a dragged pin is so situated, the presence of this sign being strong evidence of a distended appendix, for it disappears as soon as the appendix perforates. Mr. Cope's own experience as a surgeon has led him into some unfrequented regions, and he draws the reader's attention to a number of diagnostic points apt to be missed by those who do not look for them, for example, the right shoulder pain suggestive of a diaphragmatic lesion, and the test, described as the obturator test, which is a useful sign in a pelvic infection. Although the tabular arrangement makes the book very convenient for purposes of revision, the volume should prove extremely useful to general practitioners and to those holding appointments which entail the treatment of abdominal emergencies.

PATHOLOGICAL HEREDITY.

Einführung in die Allgemeine Konstitutions- und Vererbungspathologie. By Dr. H. W. SIEMENS. Berlin: Julius Springer. 1921. Pp. 229.

THE author begins by stating, truly enough, that the subject of pathological predisposition and heredity has a muddled terminology and no text-book. In fulfilment of a purpose thus indicated, he sets out to "assemble" the relevant information, and in so doing shows much knowledge and general culture. The chief stress is naturally laid upon Mendelism, since that is the most exact instrument the investigator in this field can wield. Whether it can be used with advantage, at any rate as yet, may be doubted. On low forms of life, and on rare, highly particularised human diseases, Mendelism may throw light. But, as the biometricians have not been slow, or loth, to demonstrate, in more complicated phenomena little in the way of unit behaviour is discernible. Dr. Siemens might have done better to have dwelt more on metamorphic pathological heredity—the *héredité dissemblable* of the French—and better still to have accumulated figures (perhaps he is so doing), not necessarily for mathematical treatment, but so as to secure ordinary exactness. There are 80 illustrations in the book, and workers from all countries are mentioned.

TEXT-BOOK OF NURSING PROCEDURES.

First edition. By ANNA C. JAMME, R.N., Director of Bureau of Registration of Nurses, California. New York: Macmillan Company. 1921. Pp. 140. 7*s.* 6*d.*

To those student-nurses who find help from illustrations, Miss Jamme's book on Nursing Procedures may serve to assist in the co-relation of the theory and practice of nursing. The book cannot be considered a substantial contribution to nursing literature, consisting as it does only of a collection of illustrations of nursing procedure which may be found in all good general text-books. As a supplement, however, to a text-book deficient in illustrations, the little volume may be of use.

THE MICROTOMIST'S VADE-MECUM.

A Handbook of the Methods of Microscopic Anatomy. Eighth edition. By ARTHUR BOLLES LEE, Hon. F.R.M.S. Edited by J. BRONTË GATENBY, B.A., D.Phil., D.Sc., F.R.M.S. London: J. and A. Churchill. 1921. Pp. 594. 28*s.*

IT frequently happens that a scientific text-book, after a few years of deserved popularity, falls gradually into oblivion. It becomes out of date, and its author, dreading the drudgery of bringing out fresh editions, is content to see it die. True, the task of revision may be undertaken by another, but too often the result is mediocre; there is lacking the touch of the vanished hand. The eighth edition of Lee's Microtomists' Vade-mecum is a distinguished exception to this dreary rule. Under the capable editorship of Dr. J. Brontë Gatenby it is revitalised, and once again becomes the best text-book on this subject in the English language. While the general character of the book remains unaltered, it has been carefully revised, and the addition of fresh sections, all happily conceived in the spirit of the original, brings it thoroughly up to date.

Dr. Gatenby himself, in addition to undertaking the general revision, has written on many subjects including chromatin and chromosomes, mitochondria,

the Golgi apparatus, and mammalian embryological methods. He has also secured the assistance of many collaborators, all acknowledged masters in their subjects. Thus, Prof. W. M. Bayliss writes on staining; Dr. C. Da Fano has had charge of the section on neurological technique; Dr. A. Drew has rewritten the section on protozoa; Dr. W. Cramer is responsible for most of the article on fatty substances; and Mr. Thornton Carter has revised that portion which deals with teeth and bone. Numerous other authorities have been pressed into service, and the general result is a complete and stimulating manual. The best in the older teaching is retained, and the addition of the most modern methods of cytological research makes the book essential to the serious student of microscopic anatomy.

DAIRY BACTERIOLOGY.

By Dr. ORLA-JENSEN, Professor of Technical Bio-Chemistry in the Polytechnic College, Copenhagen; formerly Director of the Swiss Experimental Dairy Station. Translated from the second Danish edition, with additions and revisions, by P. S. ARUP, B.Sc., F.I.C., Chief Chemist, English Margarine Works, Ltd. London: J. and A. Churchill. 1921. With 70 illustrations. Pp. 180. 18*s*.

THERE is much attractive matter in this work. "Lactic acid" fermentation, the ripening of dairy products, and the abnormalities which may occur therein are subjects upon which the author has spent many years of patient study, and of which he writes with great authority. But the book suffers from excessive specialism. The classification of bacteria which is given fails to recognise adequately the great body of work carried out by those who are not necessarily directly concerned with the study of milk and milk products. The inclusion of *B. typhosus* and dysentery bacilli in the coliform group suggests a failure to recognise the work of MacConkey and many others. A similar failing is found in the section which is devoted to the production of milk, and the hope, expressed by the translator, that this book should be of use to those who are engaged in the production and distribution of pure milk, is hardly justified by the text, which does not lay down clearly the essentials of clean milk production. It does not appear that the author has made a study of the keeping qualities of "clean milk"; otherwise it is difficult to understand the statement that milk cannot be kept for "longer than 24 hours, even if cooled to 0°C.; if it is to be kept longer it must be frozen." The expert will, however, find most of the matter in this book of interest, and the student may read it with advantage if he be working under adequate supervision.

The translation has been admirably carried out, though some minor errors might be corrected in future editions. Metchnikoff did not spell his name with an "s," and flagellæ is not the plural of flagellum.

PRICES AND PRICE CONTROL.

Prices and Price Control in Great Britain and the United States during the World War. By SAMUEL LITMAN, Professor of Economics, University of Illinois. New York: Oxford University Press, American Branch. Pp. 331.

Prof. Litman contributes a summary of the incidence and effect of prices and price control in the United Kingdom and in the United States to the series of Preliminary Economic Studies of the War, edited by Mr. David Kinley, Professor of Political Economy at the University of Illinois. The Carnegie Endowment for International Peace is responsible for the publication of this series, and in his preface Prof. Kinley endorses the conclusions of the author, which, on the whole, do not attribute success to the legal control of prices, undertaken with the object of checking "profiteering." "Here and there," he writes, "a government is able to catch and punish a profiteer. But legal action on the whole has had little effect at any time in preventing or removing the evil practices that have called forth so much popular denunciation."

Scientific examination of the effect of price control during the late war, carried out in the clearer atmosphere of peace conditions and at leisure, is no doubt one of the steps to be taken in order to avoid mistakes in future, should anything so disastrous as war on a large scale again take place. Prof. Litman's book contains ample material for the consideration of those interested in general economics as illustrated by the question of how far the so-called "profiteer" was in fact responsible for the rise in prices during the war, or for the condition of workmen during that period of unprecedented demand and lessened supply. With regard to the commodities specifically discussed, we note that the chemical substances referred to are confined to those used in the manufacture of munitions, and that drugs used for medicinal purposes do not come under discussion.

THE BOY IN INDUSTRY AND LEISURE.

By the Rev. ROBERT R. HYDE. London: G. Bell and Sons, Ltd. 1921. Pp. 281. 6*s*.

IN his novel "Sybil," the late Lord Beaconsfield dealt with a number of social questions with real sincerity, and one of the characters makes the remark: "The youth of a nation are the trustees of Posterity." The youth of the nation to-day are in many ways different from those of the early forties; those who are left have passed through an ordeal such as our fathers never knew, but none the less are they the "trustees of Posterity," and this in whatever class of life they may move. The problem of the adolescent boy is by no means the least important of the many problems which exercise the minds of men to-day, and anybody who wishes for light on the subject will do well to read Mr. Hyde's book, for it is written by one who has spent a lifetime in dealing with boys and in organising agencies for their welfare. From his experience he comes to the conclusion that "the boys' club is the soundest form of organisation in spite of the attractions of the more disciplined methods of brigades, cadets, or scouts, but in stating this I do not, of course, belittle such organisations. I can but write from my own experience, and it leads me to that conclusion." Whether we agree with Mr. Hyde in this opinion or not, everyone interested in boys should read this book, and if they should feel tempted to become workers in the sense of running a boys' club or aiding in other ways, they will learn what to do and, that which is more important, what not to do from Mr. Hyde's pages. One of the most interesting sections is the account given by Mr. Hyde of the working of the Industrial Welfare Society. Mr. Hyde regrets the passing of the old-time feeling of personal relation between employer and employed; it is all but impossible to retain this under the modern factory system, although various firms have done and are doing their best. Even where it cannot be revived, the system of Industrial Welfare supervision goes some way towards healing the breach which has in too many cases been made between master and man. Mr. Hyde writes wisely and sympathetically, showing the sense of humour without which his life's work could not have been done.

JOURNALS.

PARASITOLOGY. Edited by G. H. F. NUTTALL, F.R.S. Vol. XIII., No. 3. August, 1921. C. F. Clay, Cambridge University Press. 15*s*.; yearly subscription £2 5*s*.—The number opens with an article by F. J. Meggitt on a New Cestode from the Pouched Rat of East Africa.—The paper on the Excretory System in Digenea Trematodes, by E. C. Faust, contains a description of the structure and development of the excretory system in cystocercous larva of *Cercaria pekinensis*.—The note on a Protozoon Pathogenic to Mosquito Larvæ, by W. A. Lamborn, deals with an unidentified protozoal infection in the larvæ of *Stegomyia scutellaris* in Federated Malay States. Material from Lamborn's collection was studied by D. Keilin, who in the two following papers described the structure and life-history of two new parasites of

Stegomyia larvæ :—(1) a new ciliate : *Lambornella stegomyiæ* n.g., n.sp. ; (2) a new type of a fungus : *Cælomomyces stegomyiæ* n.g., n.sp. The host, *Stegomyia scutellaris*, is known as a carrier of malaria and filariasis.—The number concludes with a monograph, by Makoto Koidzumi, on the Intestinal Protozoa found in the Termites of Japan. This paper contains detailed cytological and systematic studies of the trichonymphides.—Portraits of Karl Asmund Rudolphi (1777–1832), Johannes Müller (1801–1858), and Joseph Leidy (1823–1891) are included with this number.

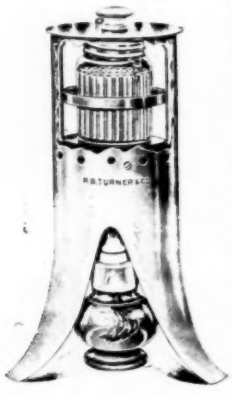
AMERICAN JOURNAL OF OPHTHALMOLOGY. August and September, 1921.—A case of typical siderosis of crystalline lens, with no clinical evidence of a splinter of iron, described by D. van Duyse (Ghent) and Mr. Danis (Brussels) in the August number, is of some interest from a medico-legal standpoint. Two years after the receipt of a wound in the eye from a casting thrown off in cutting a pipe, the crystalline lens was found to be so opaque that vision was reduced to counting fingers at 1·5 meters. In the substance of the lens were nine rust-coloured spots with diffused margins, but no foreign body could be discovered either by X rays or by the magnet. The authors believe that a small metallic particle is nevertheless present, probably fixed between the fibres of the lens. The appearance of the siderosis spots is illustrated by a coloured plate. Other articles in this number include one by E. Maddox, giving details of some new subjective tests for the detection of the true axis in astigmatism ; one by H. K. Fleck on disciform keratitis secondary to smallpox ; and two articles on ocular manifestations in encephalitis lethargica, by P. J. Waardenberg and G. I. Hogue.

To the September number Burton Chance contributes an article on radium plugs for the dissolution of orbital gliomatous masses developing after excision of the globe. In the case recorded the mass filled the orbit, pushing the lids forward. Nine plugs or "needles" containing radium were inserted deeply into the mass and allowed to remain for 20 hours. An erythema of the lids lasted a number of days, and the lids themselves were puffed with a more or less ichorous discharge. Four months later the mass appeared to have been completely dissolved. The success is attributed to the method of employing the radium. In the same number Walter R. Parker has tabulated the results of his cataract operations by different methods, and Dimitry in a paper on hereditary ptosis includes a family tree proving its persistence through five generations and showing the method of inheritance of a Mendelian dominant. Out of 38 individuals 21 showed the peculiarity. It was transmitted equally through males and females, but never by one who was normal. Strictly speaking, the condition was not a true ptosis but a blepharophimosis or small palpebral aperture stretched horizontally, a condition for which the ordinary operations for ptosis would be unavailing.

New Inventions.

A HOT-AIR STERILIZER FOR STEEL NEEDLES.

THE sterilizer here illustrated constitutes an attempt to solve the usual troubles experienced with steel needles and also to afford painless injections. The apparatus consists of a tripod, nickel-plated steel sterilizer 8·5 in. high with an upper chamber 3 in. by 2·75 in. In the upper chamber is a carrier supporting a bottle of 40 needles held up by their hilts in open glass tubes, the points being free. The bottle is one-third filled with fresh liquid paraffin. Heat is supplied by a spirit lamp below and sterilization occurs in 12 to 15 minutes. This is indicated by a gentle tinkling of the boiling paraffin, which takes place at 118° C. The bottle is then removed by a lifter. An Arkansas stone and a neat leather case containing also a bottle of liquid paraffin and a spare needle bottle are supplied optionally. The apparatus is intended for the conservation of steel needles in hospitals, in the consulting-room, and also especially for V.D. clinics, where a number of fresh sterile needles are required in series. Re-sterilization of the bottle when once opened is not necessary if due asepsis in extracting needles is observed. Far greater comfort to the patient can be attained by sharp, unoccluded and properly lubricated needles which have not rusted than by the conventional needle preserved in spirit. The sterilizer prolongs the life of steel needles very materially.



The wholesale makers are Messrs. R. B. Turner and Son, 9–11, Eagle-street, Southampton Row, London, W.C., to whom I am indebted for assistance in working out the details.

Eastbourne. A. G. SHERA, M.D. Cantab.

AN ADJUSTABLE JOINT FOR GERM-PROOF FILTER CYLINDERS.

THE London Filter and Pump Company has introduced a new form of joint and nipple for filter candles. The object is to eliminate entirely the risk of fracture of the candle, an accident to which the fixed mounted cylinders are liable during sterilisation by heat. When this defect occurs, it does so at the junction of the metal cap and the cylinder, owing to the great difference between their coefficients of expansion. The construction of the nipple and joint is shown in the illustration.

FIG. 1.—1, metal disc. 2 and 3, washers. 4, metal cap of cylinder. D, fly nut.

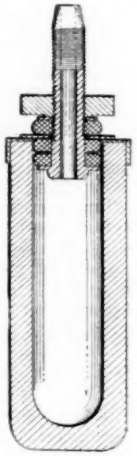


FIG. 2.—Section of nipple, joint, and cylinder.

The method of adjusting the joint is extremely simple. The nipple is pushed into the filter cylinder until the large metal disc rests on the cap of the cylinder. The fly nut is now screwed up tightly, thereby compressing the indiarubber washers and causing them to expand laterally on to the inner surface of the cylinder. By this action an impervious joint is formed. The metal cap, which is fixed round the top of the cylinder, effectually prevents fracture from the outward thrust of the indiarubber washers. A cylinder fitted with this form of nipple has given sterile filtrates over a considerable period. For the purpose of cleaning both surfaces of the cylinder and autoclaving at 120°C., the joint has to be disconnected. This has been done many times, over a period of three months with one specimen, without the joint losing its efficiency.

The advantages of such a filter cylinder will be appreciated by all bacteriological and public health authorities. E. T. THOMPSON.

Ministry of Pensions Hospital, Orpington, Kent.

THE LANCET.

LONDON: SATURDAY, OCTOBER 15, 1921.

Health Insurance and the State.

WHEN considering the question of the remuneration to be paid to practitioners on the panel there is one point which, although of vital importance to the medical profession as well as to the State, is apt to be overlooked. Cost of living, inflation of the currency and the like are, of course, urgent matters for consideration, but all these deal with the present and are matters which may be met and remedied as time passes and opportunities occur. It is the doctor's future to which attention should be drawn, and for which provision should be made. The doctor, no less than other folk, looks forward to an old age which shall be, if not one of ease, at any rate one unhampered by anxieties as to the actual means of existence. He may be able by means of insurances of one kind and another to make the necessary provision; he may be able by lucky investments to place himself in a position which frees his future from care. There has, however, always been one source to which the general practitioner has looked for considerable assistance towards his retirement—that source has been the capital value of his practice. When the Insurance Act was introduced, the fears which beset so many practitioners were both falsified and fulfilled. Fulfilled in that where his practice lay in an industrial area the value of his private work declined by 50 or even much more per cent.; falsified in that he was able to replace the loss by a practice which had become more valuable owing to the ease of transfer of his list of insured persons. This value will largely be destroyed by the action of the new clause entitled "Change of Practitioner" inserted in the Medical Benefit Regulations for 1920, and once destroyed it will not be restored.

Whether the destruction of the capital value of insurance practices is a good or a bad thing is beside the question, which is: How is the doctor to make good the loss of an interest which the Insurance Act did not create although it may have appreciated its value? What is to replace this lost capital asset? Publicans receive compensation for the abolition of licences, civil and other public servants whose offices may be discontinued are recompensed. Nothing has been heard of any suggestion for the recompense of the practitioner, although there would appear to be no more valid reason why he should not benefit from the value of the goodwill of his practice than for a similar disability in the case of the grocer or draper. On the other hand, it is now proposed to reduce the remuneration of the panel doctor, thus further limiting his power to make a provision for old age. Those who may negotiate on behalf of the panel doctor should bear this point of view in mind, and it seems possible that those negotiating on behalf of the Ministry of Health might be able to see that to give the doctor the opportunity of providing for old age is one means of providing a contented and consequently efficient medical service. If economy is the reason for the suggested reduction of the capitation fee, that object would be attained if the Government were to credit panel practitioners each year with the amount, or part of the amount, of the proposed reduction, at the same time making the desired provision for old age. The sum so credited could form a sinking fund out of which practitioners of certain age and service, might receive annuities, the actual amount to be settled by actuarial calculation.

The advantages to the doctors of some such system are manifest, whilst the advantages to the State are equally clear. The capital sum could be used to meet some of the more pressing needs brought about by the financial conditions now prevailing. Such a fund would eventually be self-supporting. The suggestion is not a new one. As Dr. H. H. MILLS reminded our readers last week, it has been before both parties since 1913, and concrete proposals were laid before the Panel Conference of 1919. We are glad to note that the subject of provision for the superannuation of practitioners is to be brought by resolution before the conference which meets next week, when the Government proposals for reduction will be considered (see p. 829).

Physiological Histology.

GUSTAV MANN, who died at Tampico in Mexico on July 18th, after an acute attack of dysentery, was a leader in his branch of medical work. He will be chiefly remembered by Oxford students of physiology under Prof. GOTCH, in whose department he was demonstrator, and in charge of the teaching of histology from 1894 to 1908. His vivid, freakish, sometimes impish, personality is not easily forgotten, and many pupils, grateful for a revelation of what histology might be, felt a real sense of loss on his translation to America, where he occupied the chair of physiology in the Tulane University in New Orleans, till his consummate skill in the gentle art of making enemies led to his drifting off into the less academic occupations of the last five or six years of his life. That MANN was easily the first histologist of his day in this country there can be no question; his technical skill was unsurpassed. But what he stood for in histology has found no representation with us since the sad death of his pupil and successor at Oxford, S. G. SCOTT. He saw quite clearly, and constantly emphasised in his teaching, that histology was not a department of knowledge but an item of the apparatus which should help to elucidate the general laws governing biological phenomena. It comprises, he said, "investigations into the structure, the chemical composition, and the functions of healthy and diseased animal and vegetable cells." Histology was to him a part of physiology, and he looked on micro-anatomy as its elementary introduction. The difference between this point of view and that more commonly held may be appreciated by comparing his "Physiological Histology" with, for instance, the "Microtomist's Vade-Mecum," a hardy perennial which has blossomed again this season.[1] This excellent manual sets out to tell us what has been done and how to do it, while the "Physiological Histology" in addition conjures up a vision of what might be done and how most likely we might do it. The main idea that ran through MANN'S own restless and vagarious work of brain and hand was that a fuller knowledge of the chemistry and physics of protoplasm and of dyes would lead to our recognition of the nature of cell constituents as certainly as we identify inorganic iron by the Prussian blue reaction. "The method of staining grew and grew," he said, "till to be a histologist

[1] See p. 808 of this issue.

became practically synonymous with being a dyer, with this difference, that the professional dyer knew what he was about, while the histologist with few exceptions did not know, nor does he to the present day." His hope that this could be corrected may have been as exaggerated as his faith in the basis of technological practice, but his beliefs all centred round his impregnable ideal that structure and function must explain each other.

The earlier histologists knew this quite well; to BOWMAN the structure and function of the kidney were one problem. As the microscope became a commonplace and its technique developed, physiologists found, however, that the instrument which they looked to for the solution of their difficulties was raising as many problems as it was answering. Those who believe that the lung is a secretory organ say as little about the structure of the epithelium as they can help, and inflammation and immunity are long since divorced. In despair, we must suppose, of ever making form and function fit, physiology is now in general ready to throw histology overboard, that it may brighten the routine of anatomy. For the moment histology is at a discount among us, but it is not the histology that MANN taught. Some day a bright spirit will reappear, and will carry on MANN'S inspired work, when probably "Physiologcial Histology" will go through many editions or form the inspiration for future treatises. The book is, of course, now out of date in many parts; the physical chemistry of proteids has advanced a long way since 1902. But it still indicates the line along which histology could be pursued with profit; fixers and stainers have not yet absorbed its chief thesis, which is that they ought to know more of the why and wherefore of what they do.

Accessible Hospital Records.

ONE of the difficulties with which a large general hospital has to deal is the accumulation of patients' notes. After a few years the mass of material becomes enormous and, as the *Hospital Gazette* has pointed out, the setting aside of storage room for the purpose is no easy matter. The suggestion is there made that many of the actual notes might be destroyed and concise records of each patient kept in a book under separate headings. Although the drawbacks of present methods are very great from the medical aspect, it is doubtful whether the system advocated would meet all requirements. In most large hospitals there is a registration department in which all the in-patient notes are collected. After a period of a year or so they are bound together to form unwieldy volumes, and in a big institution the number of such books rapidly increases until it becomes almost impossible to find space for them where they can remain easily accessible. The notes are often required for reference when a patient is readmitted or when a member of the staff wishes to investigate a series of cases. It is especially in looking up a large number of cases of a given disease that the present system is found so inadequate, for the notes are bound according to dates, irrespective of the nature of the disease. The notes of every individual case are kept, and space may be taken up by a number of nearly blank sheets and charts of a patient detained for a single night with some trivial ailment. Hence a search may involve the withdrawal from storage of a large number of bulky volumes, each containing one of the required cases. The books are heavy to carry about when the past history of a case has to be reinvestigated in the wards. There is also the grave disability that in-patient are separated from out-patient notes, and in the out-patient department there is at best a brief abstract of the in-patient findings.

These difficulties are overcome to a large extent by the method used in some departments of the London Hospital. On admission the patient has his notes taken by the surgeon or an assistant acting immediately under his supervision. The headings on the first page include only the name, age, and address of the patient, the name of the doctor, the date of admission, and the complete diagnosis on leaving hospital. The notes are kept in boxes in the wards and are not attached to a bed-board where they are apt to become soiled and torn. On leaving hospital the patient is given a dated card for attendance at the "follow-up" department, where his notes are card-indexed under the diagnosis and kept in alphabetical order in a box file. When a patient returns, the secretary of the follow-up department produces the notes for the surgeon to make additions; there is no break between in-patient and out-patient record. Trivial cases admitted to hospital do not come under the system; a record of them is kept in a book in the steward's office, with headings similar to those advocated in the *Hospital Gazette*. By this means a mass of useless material is abolished, and it is found that a small cupboard in the follow-up department will accommodate the whole of the notes for one surgeon for 15 or 20 years.

Such a method of note-keeping combined with a follow-up department deserves more general adoption. It is of value to the surgeon, enabling him to determine with accuracy the after-results of his treatment. It is of value to the patient who is seen at regular intervals, when any complication is noted early and adequately treated. It is of value in the organisation of the hospital; wards and out-patient department are not crowded out with old cases. The scheme may appear at first sight to throw extra work upon the staff, as an extra half-day a week has to be given to the examination of these cases. In practice, so great is the relief from interruption by old cases during an afternoon devoted to teaching that time may actually be saved. One half-day a week alone being required by each physician or surgeon, a follow-up secretary is able to control 11 departments. It has been suggested that, since each member of the staff has control of the notes of his own cases, difficulties may arise if an independent investigator wishes to look up a series. The reverse is the fact; instead of having to consult 50 or more large volumes he sees as many bound notes, which can be consulted with corresponding leisure.

UNIVERSITY OF LEEDS: A CHAIR OF BACTERIOLOGY.—Sir Edward Allen Brotherton, M.P., has given £20,000 to this university for the development of bacteriological study and research, more particularly in the interests of public health. This is the largest individual gift ever received by the University of Leeds. Sir Edward Brotherton, an ex-Lord Mayor of Leeds, who takes an active interest in many branches of public life, has been profoundly impressed by the importance of the study of bacteriology. He is chairman of the University Advisory Committee on the Department of Pathology and Bacteriology. This body includes representatives of the weekly board of the General Infirmary, of the Leeds City Council, and of the County Councils of the North, East, and West Ridings. The Department of the University of Leeds with which this committee is concerned is engaged in research as well as with the instruction of students, and also performs the bacteriological tests required by the public health department of the city, by the General Infirmary at Leeds, and by other bodies outside the city.

Annotations.

"Ne quid nimis."

NORMAL CONTROLS IN PATHOLOGICAL INVESTIGATIONS.

A PAPER such as the Gastro-enterological Number of the *New York Medical Journal*,[1] which has just reached us, intensifies the importance of securing adequate controls in all pathological investigations. On the one hand we read of laboratory investigations whose complexity and difficulty must place them beyond the purse of the average patient, and, on the other we learn of huge institutions, excelling in size and equipment anything known in Europe, where cases are dealt with in enormous numbers—followed, as the authors allow, by doubtful success—and are treated by methods which differ radically from one another in the various clinics. Economic considerations will prohibit a similar state of affairs in England for many years to come. But we are tempted to ask whether our patients, with the careful attention of our more individualistic clinicians, may not gain, at any rate in some directions, by our lack of organisation. We read of gastric analyses involving one or more test-meals and several gastric lavages, followed by estimations of acid, bile content, mucus, blood both free and occult, trypsin, pepsin, pepsinogen, rennin, renninzymoza, and half a dozen other chemical constituents, with cytological examination for six different types of epithelium and some dozen groups of bacteria, yet nowhere in this same article do we find evidence as to the frequency of occurrence of parallel findings in the normal healthy person. In another article in the same journal we read the latest investigations of Prof. Max Einhorn, who momentarily abandons the "gastric bucket," the "duodenal thread," and the "intestinal delineator," in order to describe the biliary secretion excited by a formidable variety of salts and other chemical substances; but here we note that Prof. Einhorn's conclusions are drawn from four patients only, and that all of them were suffering from grave organic disease. Nor is Prof. Einhorn alone, for in this same journal are two other articles, by well-known American physicians, describing elaborate diagnostic and therapeutic procedures in cases of disease of the biliary passages, all based upon the original observations of Lyon, that instillation of a strong solution of magnesium sulphate into the duodenum is followed by an outflow of bile. But is there existent any series of experiments on normal men which can allow comparison to be made with the findings in these pathological cases? If these refinements of laboratory technique are to have any permanent utility—and surely amongst these laborious American researches there must be much which is of value—it is clear that laboratory work on the healthy individual must be brought into a far more prominent position that it holds at the present day. Each year adds to the syllabus of the overworked medical student, but it should be possible, by judicious modification of the usual methods of teaching physiology, to send him to the wards already conversant with the technique of investigation which he there sees applied to patients; and the same method would supply to the clinician those normal standards of comparison whose absence at present may lead him into errors of the gravest kind. To those of us who have come to think of America as the land where the ideal medical clinic exists as a reality there is something of sacrilege in the article by Dr. Wendkos, of Philadelphia, in the journal under discussion, wherein he speaks of the serious percentage of gastric cases which leave even the Mayo clinic undiagnosed, some of them to return with inoperable carcinoma; or of the statistics of cure at the Sippy clinic, figures which, he implies, are altogether erroneous owing to the original diagnosis of gastric ulcer having been made on inadequate grounds. No less surprising is his description of a hospital where the gastro-intestinal patients are indiscriminately, for "experimental purposes," treated by psychotherapy. At a time when medical progress in England is severely handicapped by economic distress there is perhaps a grain of comfort in the reflexion that we are left in possession of our proverbial British phlegm.

[1] New York Medical Journal, cxiv., No. 5, Sept. 7th, 1921.

THE LIFE OF METCHNIKOFF.

A BIOGRAPHY[1] of Elie Metchnikoff by his wife, now available to English readers in a very readable translation by Mrs. R. L. Devonshire, gives fully and with the intimate sympathy that would be expected an illuminating account of the man—his impressionable childhood, his wonderful growth as a university student, the emotional lapses that led him to two attempts on his own life, the calm of his later years with their passionate desire to find a philosophy of human existence which should make it better. And we can form a pretty clear picture from the personal details which help so much to explain what a man does and are so often missing from biographies. The narrative of Metchnikoff's scientific work is less satisfactory: it seems to lack sequence and fails to place in its proper perspective the discoveries for which he is and will be most famous. It was in 1882, at the age of 37, that he appears to have definitely conceived the idea that wandering cells might defend the body against foreign and injurious particles by taking them into their substance and digesting them, and till about the end of the century his energies were entirely devoted to the development and elaboration of this into a complete theory of immunity. Up to a point all went well, but when the newer knowledge of the production of antibodies and their humoral action came along he failed to convince his fellow workers that the phenomena were just an extension of his "doctrine" of phagocytosis, as Sir Ray Lankester calls it in a reminiscent preface to the translation. The account given in this biography would lead the general reader to suppose that Metchnikoff really succeeded in "proving" that antibodies arise from leucocytes either by their disintegration or by an exaggeration of their normal digestive processes. This is hardly a fair valuation of his attempts to decide a very difficult question which still evades complete solution. We have noticed evidence of defective technical editing in the footnote on p. 175, where "immunising body" is given as a synonym of his "fixator," and on the following page where "cytasis" twice can hardly be a misprint. The truth of the matter, as we pointed out[2] at the time of Metchnikoff's death, is that in the controversies in which Metchnikoff represented one side and Ehrlich the other extreme, both parties turned out to be partly right—and modern bacteriological research is blending the views of the German "humoral" and the French "cellular" school into a harmonious whole.

[1] Life of Elie Metchnikoff. By Olga Metchnikoff. London: Constable and Co. 1921. Pp. 297. 21s.

[2] THE LANCET, 1916, ii., 159.

INNERVATION OF STRIPED MUSCLE.

MANY papers have recently been published under the title of the Double Innervation of Striated Muscle. In the current issue of *Brain* Dr. J. T. Wilson, F.R.S., Challis professor of anatomy in the University of Sydney, regards this title as unsatisfactory because it ignores the distinction between the sensory and motor innervation of the muscle tissue. Even if we substitute the expression "double motor innervation" there remains the objection that two very different conditions as regards the motor nerve supply of muscle have been recognised, either of which may well enough be brought into this category. The first of these is the plurisegmental innervation

of single muscles. Much light has been thrown upon this problem by the work of Agduhr, who suggests that where a striped muscle fibre has more than one motor end-plate these belong to different segmental nerves. The second condition is of an entirely different order. This double innervation is constituted by the presence in the various skeletal muscles so far examined of non-myelinated motor nerve fibres, which are alleged to be independent of the ordinary myelinated motor nerve fibres not only in structural connexion but in origin. These so-called accessory motor fibres sometimes terminate in the same motor end-plates in which the terminals of the ordinary motor nerve fibres end; but they frequently end in accessory, independent, motor end-organs of characteristically smaller size. The work of Boeke from 1909 onwards has led to a fairly general acceptance of the evidence for a double motor innervation of striped muscle in this sense. He recognised the occurrence in muscle of a system of fine non-myelinated fibres which appear to him to be quite independent of the ordinary myelinated fibres; they showed characteristic termination in the shape of fine end-rings, loops, or nets. He laid stress upon their hypolemmal position and their often intimate association with the ordinary motor end-plates as witnessing to their centrifugal and quasi-motor function. In 1916 Boeke examined the end-plates in ocular muscles after section of their nerves: in 1919 Boeke and de Barenne published the results of section in a cat of the anterior and posterior roots of the sixth to ninth thoracic nerves inclusive, and of extirpation of the corresponding spinal ganglia; the condition as regards innervation of the muscles of the seventh intercostal space was investigated after the lapse of a period of one month; in the same year Agduhr investigated the interossei muscles in the cat. Prof. Wilson concludes that it is difficult, if not impossible, to avoid the deduction, drawn by Boeke, Agduhr, and others from their crucial experiments, that the accessory fibres are sympathetic in origin and hypolemmal in their mode of termination. These relationships, if admitted, would indicate a centrifugal conduction of nerve impulses, presumably of motor and possibly of tonic contractile character.

PARA-MEDICAL RESEARCH.

THE report for 1920–21 of the Committee of the Privy Council for Scientific and Industrial Research[1] touches the fringe of several medical problems and describes work linked at several points with that being undertaken under the auspices of the Medical Research Council. For example, it is at the suggestion of this Council that a subcommittee of the British Scientific Instrument Research Association, in coöperation with the Electro-Therapeutic Section of the Royal Society of Medicine, is drawing up a specification of an X ray outfit complete with modern requirements. On the medical aspect of the work of the National Physical Laboratory, again, we have recently commented.[2] The Deep and Hot Mines Research Committee records progress in the control of atmospheric conditions in mines; experiments on the effects of high temperatures on the output of the mine-worker are said to have yielded results of considerable interest. The Food Investigation Board anticipates that the new low temperature station for research in bio-chemistry and bio-physics now being erected at Cambridge will be complete at the end of this year. Prof. W. Stiles has prepared a memoir, now in the press, on the general theory of the preservation of food by cold, from a physiological standpoint. In the course of a general study of the phenomena of putrefaction the conditions determining the production of lactic acid in muscle have been the subject of investigations by D. L. Foster and D. M. Moyle; G. S. Graham Smith has attempted to ascertain the factors which determine the rate of multiplication of bacteria, while W. G. Savage has published a study of the effect of a diet containing putrefying foods upon the health of animals. Other reports on the bacteriology and chemistry of canned foods are nearing completion. Experiments on cooking and heating stoves, on the transmission of heat and gases through wall materials, and the condensation of moisture on their surfaces are being made. In view of the importance of formaldehyde in the manufacture of disinfectants, and of the fact that supplies are at present almost entirely imported or made from imported materials, the Chemistry Coördinating Research Board proposes to investigate the possibilities of its production in this country. The Oxygen Research Committee announces that a handbook is in preparation embodying the more important results of its inquiries and experiments, and giving some account of the general methods of production and the application and uses of oxygen. The types of gas cylinders most suitable for use in hospitals and for mine rescue work are also being considered by experts.

These few examples of investigations undertaken under the auspices of a committee of the Privy Council with the primary object of advancing science and industry rather than medicine are sufficient to show the interdependence of all scientific research. The desirability of the direction of medical research towards industrial problems has been sufficiently emphasised of recent years; we hear less of the advantages to medicine of research in other fields. The results obtained from these investigations may suggest fruitful lines of inquiry on an entirely different aspect of a subject, and, as is argued in this report, even irregular or unexplained results may often form the starting point for important advances on a side issue. We therefore commend this important and suggestive report to the attention of our readers.

[1] H.M. Stationery Office. Cmd. 1491. 1s.
[2] THE LANCET, July 16th, p. 145.

NUTRITIONAL KERATOMALACIA IN INFANTS.

KERATOMALACIA, of which Dr. S. G. Ross,[1] of Baltimore, records four illustrative cases, is an infantile ulceration of the cornea with xerosis of the conjunctiva, the rarity of which is shown by the fact that these were the only examples of the condition among more than 28,000 admissions to the children's department of the Johns Hopkins Hospital. The relationship between this type of corneal disease and malnutrition in infants was first noticed by W. Mackenzie in 1857, and was confirmed by subsequent writers, among whom we may mention Holmes Spicer,[2] who in 1892 observed the condition in England only among artificially reared infants, who had a diet lacking in nitrogenous elements. He also noted that it was not uncommon in countries where nursing mothers practised long fasts. In 1904 Mori described a disease prevalent in Japan among children aged from 2 to 5 years, and characterised by diarrhœa, excessive appetite, swelling of the abdomen, loss of weight, night-blindness, dryness of the skin and hair, and xerosis conjunctivæ. Breast-feeding in such cases was almost universal for a year, and subsequently the diet consisted almost entirely of cereals and some vegetables. In the course of four years Mori observed 1511 cases of this disease, of which 116 developed keratomalacia. In 1906 Czerny and Keller, in their description of "Mehlnährschaden," a nutritional disease in infants due to an almost exclusive diet of carbohydrates, drew attention to keratomalacia as one of the complications. In 1917 McCollum and Simmonds suggested that lack of the accessory substance, which McCollum in 1916 had named "fat-soluble A," was the cause of the deficiency disease both in young rats and infants. In Dr. Ross's cases the children had been fed almost exclusively on condensed milk, a food high in carbohydrate value, relatively low in fat and protein, and probably deficient in the fat-soluble A factor. The prognosis of keratomalacia is grave in infants, but improves

[1] American Journal of Diseases of Children, September, 1921.
[2] THE LANCET, 1892, ii., 1387.

greatly above the age of 1 year. Death results from nutritional disturbance, and the eye lesion is an indication that this is far advanced. Three of Dr. Ross's cases died, two from broncho-pneumonia. Treatment consists in supplying a sufficient quantity of animal fat which contains the fat-soluble A factor. If breast milk is not available, cow's milk should be employed. The use of cod-liver oil, which acted as a specific in the Japanese cases observed by Mori, should be begun immediately in doses of 5 minims, three times a day.

UNIVERSITIES' LIBRARY FOR CENTRAL EUROPE.

THE first year's report of the Universities' Library for Central Europe has now appeared. The name of the library has been changed from "The Anglo-American University Library for Central Europe," as a result of the decision of the United States workers to carry on with their separate organisation of supply. It is announced that the results of the appeal, whilst enabling a great deal to be done towards renewal of stocks of English literature in Central European universities and libraries, has not been sufficient to allow of large-scale "literary relief." So far, more than 2000 separate treatises have been despatched, in addition to a large number of scientific reviews and periodicals, and journals and transactions of learned societies. A special letter, sent to every periodical and journal which had been asked for, brought excellent results; in a number of cases five or six complete sets of various journals for the war period were despatched to the continental centres. The number of consignments of literature sent to the centres was as follows: Austria, 17; Czecho-Slovakia, 4; Esthonia, 1; Germany (4 centres), 21; Hungary, 5; Poland, 4. Many of the continental universities have again been put into touch with English scientific societies with a view to an exchange of publications; reduced subscription rates have been secured for a number of important scientific journals, and other facilities for transmission of gifts of literature have been arranged. An appeal was issued to all publishers asking for special credit and other terms to continental universities, but only the Oxford University Press sent a favourable reply. The Society of Friends undertook the transport of consignments at their special rates. Parcels for Czecho-Slovakia and Esthonia were collected and transmitted by the respective Legations, and it is hoped that it will be possible to extend this practice to other countries. Comparatively limited as has been the number of books sent, their distribution has been highly appreciated on the Continent. The library has undoubtedly justified its existence, and it is to be noted that generous support in the form of money and books is still urgently needed. The names of the donors of literature and the audited balance sheet are included in the report.

THE CONTROL OF SURGICAL MENOPAUSE.

EVERY operating gynæcologist has seen troublesome results follow a sudden cessation of the internal secretion of the ovaries. Dr. Albert Groves Hulett, of East Orange, New Jersey, having had some distressing experiences with patients after oöphorectomy or pan-hysterectomy, devised a routine administration of ovarian extract which has been successful in making the induction of the artificial menopause a gradual one, unaccompanied by any mental distress. His technique[1] is as follows: "Starting on the fifth day after operation the patient is given 5 gr. of ovarian substance in tablet form four times daily. This dosage is continued for one month. For the next two months three doses of 5 gr. each are administered daily. Throughout the succeeding three months the dose is 3 gr., three times daily; during the seventh and eighth months the patient takes 3 gr. twice daily; and during the ninth month 2 gr. twice daily. In the tenth month 2 gr. are taken each night upon retiring; in the eleventh month 2 gr. on retiring on alternate nights; and in the twelfth month 2 gr. upon retiring every fourth night." Dr. Hulett has the advantage of experience in this method, which he does not claim as original, and it would, therefore, seem unfair to criticise his technique. It would be interesting to know, however, whether any extensive trial had been made of an acclimatisation extending over say 3 months instead of 12. With his further advice that the patient should resume, as soon as possible after the operation, all her normal habits of living everyone will be in cordial agreement.

[1] The Induction of Gradual Normal Menopause after Ovariectomy, Medical Record, August 27th, p. 369.

DEVELOPMENTAL ABNORMALITIES.

MEDIAN hare-lip is of very rare occurrence. In the current number of *Dental Cosmos*, Dr. S. L. Silverman reports an example of it, associated with completely closed palate, a simple median nostril, and complete absence of external nose. There was also an encephalocele. Median hare-lip is known, at any rate by report, to all students interested in facial deformities, and in this case is evidently due to the want of development of the fronto-nasal process. The perfect palate is enough to indicate that the maxillary processes possessed their growing power, but it is not impossible or unlikely that the portions of these processes which reach the middle line of the roof of the general mouth-cavity, and reach and aid the growth of the fronto-nasal process, were defective in association with the failure of this latter region. The short report throws no light on this point, but if the assumption is correct it follows that there can be little or no provision of a mesodermal bed in the depths of which the nasal fossæ could grow to their full height, whence the smallness of the fossæ. It would seem not improbable that the so-called median single nostril may be but an appearance on the surface, the overlapping maxillary growth hiding the small undeveloped nasal fossæ. But nothing short of careful serial sectioning would enable a thorough explanation of the specimen to be given.

PSEUDO-RUBELLA.

Dr. Thompson S. Westcott,[1] associate in diseases of children of the University of Pennsylvania, applies this term to an eruptive disease of which he has observed isolated examples during the last ten years in infants between the ages of 8 months and 2 years. The onset is abrupt, with a rise of temperature to 102° or 103° F. There is no cough, coryza, lacrymation, nor conjunctival irritation. The fauces are normal. The following day the temperature remains high, and nothing new is found except slight enlargement and tenderness of the posterior cervical glands. The posterior auricular and axillary glands are not affected, but in some instances the inguinal glands are involved. During the next two days the temperature remains raised, and on the evening of the fourth day a few discrete red macules appear on the neck, face, under the eyes, or above the clavicles. On the fifth day the temperature is lower, the rash is more marked, covering the face, neck, chest, and shoulders. It is more discrete than a rubella rash, and not raised above the surface, but in some areas, especially the loins and thighs, it shows a tendency to coalesce. On the sixth day the temperature and pulse are normal, and the rash begins to fade, disappearing in the next two days without any subsequent desquamation. In spite of its resemblance to rubella in the appearance of the rash, enlargement of the posterior cervical glands, and febrile course, pseudo-rubella differs from it in its non-contagious character, its age distribution—the disease being confined to children under 2, while rubella is most frequent

[1] American Journal of the Medical Sciences, September, 1921.

between 5 and 15—and its prolonged prodromal stage. From the fourth disease pseudo-rubella is distinguished by its long prodromal period, slower progress of the eruption, character of the rash, lack of contagiousness, and absence of throat symptoms and desquamation. Dr. Westcott concludes that the condition described is a mild infection, non-contagious, or only feebly contagious, to which young infants are particularly susceptible and older children not all or only rarely liable.

NEW SPECIMENS AT THE ROYAL COLLEGE OF SURGEONS.

AMONG the recent acquisitions by the museum of the Royal College of Surgeons which are now on show at the annual exhibition are a series of specimens from the Onodi collection which was presented to the college early this year. This collection, as we have previously noted, illustrates the surgical and pathological anatomy of the nasal fossæ. Perhaps the most remarkable specimen of these yet mounted is one (No. 29) of a choanal polyp, which springs from the wall of the right maxillary sinus. It has widened the opening of this cavity into the nose and is seen passing forwards and backwards towards the anterior and posterior nares. From a crypt on the nasal surface of the polyp a barley-corn with husk was found. As it is a wet specimen and has been preserved in spirit it is pretty certain that this gained access to the nose during life. Until more specimens have been cleaned and mounted it has only been possible to allot temporary numbers and to make a provisional classification. This divides the specimens into those showing relations of the cavities as a group to surrounding structures, those showing the average normal anatomy of various sinuses, and those showing normal but unusual anatomy of the sinuses and pathological specimens. In the first three groups there is much overlapping, and it is not yet certain whether such a classification can be retained.

CRIME AND MENTAL DEFICIENCY.

THE relationship between crime and mental deficiency is a matter not only of considerable philosophical and scientific interest, but also of great practical importance. It is, moreover, one regarding which it is very desirable that the medical practitioner should be well informed, since he is not infrequently called upon to deal professionally with both crime and mental defect. Unfortunately the instruction he receives during the ordinary medical curriculum is far from adequate, and it was for the purpose of remedying this that the University of London has instituted a special course of post-graduate lectures and clinical instruction on the subject of Mental Deficiency. In this issue of THE LANCET we publish a lecture given at this course by Dr. W. C. Sullivan on Crime and Mental Deficiency, which should prove of considerable value in the elucidation of this problem. As Dr. Sullivan points out, although the statement is often made that crime is the result of a special criminal diathesis or temperament, this is a view which requires a good deal of qualification. Crime, in fact, is not a biological concept at all, but a legal one, and, moreover, a concept which not only differs very greatly with different races, but even with the same race at different periods. Man inherits certain deeply ingrained impulses to action from his remote past which are for the most part essentially egoistic; in the course of time it is found that the manifestation of these impulses conflicts with the well-being of the community as a whole; in consequence laws are made and standards set up for the regulation of his conduct, and the person who violates or fails to conform to these standards is a criminal.

It is probable that most normal persons are potential criminals, for they possess these primitive impulses to action; they are, however, not actual criminals, inasmuch as they have developed in addition certain inhibitory qualities which enable them to modify and restrain these impulses in accordance with the standards of their society. Upon what does this conformity or non-conformity depend—in other words, what is the psychological basis of misconduct? No doubt the mental factors concerned are highly complex, and our knowledge regarding them is admittedly still imperfect; we may, however, specify three which, undoubtedly, have considerable influence in the regulation of conduct—namely, knowledge of the requirements of the law, sense of social or moral obligation, ability to learn from experience and to appreciate the personal disadvantage resulting from certain acts. These inhibitory processes may, of course, be disordered, as in cases of insanity; they may, however, be primarily defective, and this is the case with many persons suffering from mental deficiency. It is therefore not surprising to find that crime is relatively far more frequent in aments than in those of normal mental development, and whilst statistics on this point are not free from certain fallacies it is significant that while the proportion of aments in the general population is about 0·5 per cent., the proportion of aments in the prison population is from 10 to 20 per cent. This point, which is really only one aspect of the problem of the mentally defective, raises the question as to whether the decision to postpone providing adequate provision for this class on the plea of economy is really an economical process for the nation. There is, however, another class of defectives who are even more closely related to crime—in fact, who are incorrigible criminals and whose lives are one long record of crime and social danger. This class has long been known to psychiatrists, but has only recently received legal recognition, and there is no doubt that much misapprehension still exists concerning it. We refer to the class of moral imbeciles.

As was pointed out in a recent address before the Royal Society of Medicine by Dr. A. F. Tredgold,[1] moral imbeciles differ from ordinary defectives in that they present no inability to learn in school and no defect of that lower level of intelligence which is concerned in the adaptation of conduct to the immediate requirements of the moment: on the contrary they are often well educated, plausible talkers, of prepossessing appearance, and decidedly cunning, so much so that persons with a limited knowledge of psychological medicine have the greatest difficulty in realising that they can be defectives. Nevertheless, they are defective in certain constituents of mind which are of vital importance in the regulation of conduct, and it is such defect which brings them within the definition given in the Act. Dr. Tredgold states that there are two psychological processes which are thus defective in the moral imbecile—namely, moral or social sense, and that higher form of intelligence which enables an individual to adapt his conduct, not merely to the requirements of the moment, but to those of the more remote future; this was designated "wisdom" by the late Dr. Mercier, and is popularly known as common sense. It is shown that defect of moral sense is not in itself sufficient to account for persistent crime, and as a matter of fact there are many persons amongst the ordinary population whose moral sense is decidedly weak, but who are not criminals for the reason that their wisdom tells them that should they be detected the disadvantages would be greater than the advantages; they may, however, commit occasional crimes if the circumstances are such as to lead them to think that they will not be found out. The moral imbecile, on the other hand, is lacking in both wisdom and moral sentiment; in consequence his primitive self-seeking impulses have full and unfettered play and he is a persistent and incorrigible criminal. There can be no doubt that this condition of moral imbecility is one of very great social importance,

[1] Clinical Journal, Sept. 28th, 1921.

and the newspapers frequently contain accounts of serious, and in some cases horrible, crimes which have been committed by persons of this class. At the same time the medical man who is called upon to examine a person guilty of persistent misconduct or crime must bear in mind that it does not of necessity follow that he is a moral imbecile. As Dr. Tredgold points out, continuous misconduct may result from a disorder of these controlling functions of mind, a not infrequent event during the period of adolescence; it may also result from their delayed development, and this may be a consequence either of some individual peculiarity or of faulty training and surroundings. In the moral imbecile it is neither a question of disorder nor delay, but of a fundamental and innate defect of mind in consequence of which the individual remains permanently incapable of adapting his conduct to the requirements of the community.

POINTS IN SANATORIUM CONSTRUCTION.

A WELL-ATTENDED general meeting of the Society of Superintendents of Tuberculosis Institutions was held at 122, Harley-street, W., on Oct. 3rd. After the representatives of the society to the International Conference on Tuberculosis had made their reports, Mr. Edwin T. Hall, F.R.I.B.A., delivered an address on Some Points in Sanatorium Construction, illustrated with lantern slides, in which he emphasised the necessity of close coöperation between the medical officer and the architect, as the latter was apt to overlook points bearing on the administration of institutions for the tuberculous. Mr. Hall expressed his general agreement with Committee Report No. 7 of the Society, which dealt with the construction and equipment of tuberculosis institutions, and went on to state some personal opinions on the subject. He considered that every room should receive some sunlight during the course of the day, and therefore favoured south, south-west, or south-east aspects. No ward or pavilion should overlook another; rooms might contain one bed or more, up to the number of eight. Dining and recreation rooms were better kept separate; if either apartment had to serve as chapel it was advisable to have the altar well screened off. The nursing block should have heating apparatus ready for use, and a small isolation block was desirable; covered ways of communication were practically indispensable in this climate. The rooms of the nursing staff should face away from the rest of the sanatorium buildings.

THE INTERNATIONAL ASPECTS OF ALCOHOLISM.

THE ninth Norman Kerr memorial lecture was delivered on Tuesday last by Sir Arthur Newsholme, late Principal Medical Officer to the Local Government Board. This lecture, it will be remembered, was established in 1884 in honour of a great temperance worker and in connexion with the Society for the Study of Inebriety; and Sir Arthur Newsholme, who has only recently returned from his duties in the United States, directed especial attention, in discussing the international aspects of alcoholism, to the question of prohibition in America. The great social revolution in America he attributed partly to organised propaganda against the abuses in drinking saloons—these seriously reflected upon the conduct of municipal politics, partly to temperance teaching in the elementary schools, partly to a national desire to improve industrial efficiency, and partly to strongly expressed opinion on the part of the medical profession in America. He alluded also to one other factor—namely, the occurrence of bestial attacks upon women in certain districts by negroes inflamed by drink.

The results of the first year of national prohibition in America are admittedly only partial, smuggling and illicit stills having some small counter-effect, while we can easily learn from newspaper reports that large secret stores still exist. But, according to Sir Arthur Newsholme, the vast majority of the American population can no longer obtain alcohol; the law and the cost preclude the indulgence, with the result that large sums of money have been diverted to the purchase of better clothing, while preventive work can take the place of rescue work in populous centres, and admissions to hospitals for alcoholism show remarkable decline. Defending the action of the United States from the accusation of being arbitrary or undemocratic, the lecturer pointed out that in all civilised countries there are many examples of enactments which diminish freedom of action for the many, but which are devised for the protection of the few with the sanction of the community. In such instances, while he admitted that moral and voluntary procedure would always be preferable to compulsion, he urged that moral suasion acts slowly even on minorities, during which time the innocent suffer for the lapses of the weak. He found the suggestion that prohibition might exercise a sinister influence on the moral fibre of the American population by encouraging "prohibition cranks" fantastic. As in a democratically governed country the sale of an article for consumption can never be prohibited unless its consumption can be shown to the satisfaction of the majority to be mischievous the case in favour of enforcement of prohibition in America is rendered strong by popular acquiescence. After all, democratic government is a government by majorities, and where compulsion seems to be a necessary element for success, that success can only be permanent with the consent of the governed.

THE ÆTIOLOGY OF TYPHOID FEVER.

Dr. W. H. Hamer in his presidential address to the metropolitan branch of the Society of Medical Officers of Health last week, raised some interesting points. Fifty years ago, he said, it was the fashion to ascribe typhoid fever to faulty drains; later river water-supplies and polluted milk were held responsible. It was recognised 70 years ago that typhoid excreta were the source of danger, but not fresh evacuations, direct case-to-case infection not being admitted. Murchison countenanced de novo origin, and Pettenkofer ascribed importance to earth temperature and ground water-levels. In the nineties were discovered (1) Eberth's bacillus, and (2) that typhoid could be communicated by shell-fish, with the result that epidemiology was divided into "contagionists" (following Koch) and "localists" (following Pettenkofer), the former quickly getting the upper hand. Bulstrode's great oyster report was published in 1896, and that on other shell-fish in 1911, but the shell-fish discovery had not the same wide reception as Eberth's discovery. In 1900 fish outbreaks occurred in London, and in the next ten years the importance of estuarial pollution was increasingly realised. Dr. Hamer attributed the disappearance in London of the autumnal rise of typhoid in 1907, and from 1912 onwards, partly to the abandonment by the East Coast fishing companies of certain nurseries of small flat fish. A similar change, observed in 1914 in Manchester, was attributed by Dr. J. Niven to improvement in the quality of mussels. Meanwhile, those advocating the contagion hypothesis were in difficulties. Sewer men did not contract typhoid fever; convincing examples of direct case-to-case infection were hard to find, and could be explained by persistence of the original cause. The supporters of the contagion theory had to fall back on unrecognised cases and healthy carriers. Dr. Hamer pointed out that the bacteriology of typhoid had, in recent years, become modified, and the present time, therefore, was appropriate for a review of the position. Human testimony was often fallacious, and the credibility of a witness varied in an extremely complicated way according to the subject. Sensations relevant to the inquiry had necessarily been filtered, as it were, through the medium of the witness's interest. Nothing was more obscure than the process by which we

deduced probable conclusions from certain data. The cause of typhoid was, moreover, variously attributed in different places: in Belfast to cockles, in Germany to the healthy carrier, in certain Scotch and American cities to milk, in the South African and the Spanish-American war to flies. Few who studied Bulstrode's elucidation of the case of the Winchester and Southampton banquets could fail to suspect oysters, even though the drains of the houses of some of the sufferers failed to pass the water test, and though the housekeeper of one sufferer, or the aunt of another, had become a typhoid carrier 20 years previously. In the light of recent knowledge some of the reports of earlier epidemiologists make fascinating reading. When the facts of the prevalences of typhoid in the Tees Valley, Belfast, Newport, Worthing, Bangor, and King's Lynn, which had been attributed to water pollution, were reviewed in the light of shell-fish pollution, the verdict against the water seemed less clear. In connexion with supposed food infections, especially milk, Dr. Hamer referred to the complication of the healthy carrier. The case for estuarial pollution versus the oyster-barman-carrier has been fully argued elsewhere.

The broad fact emerging from Dr. Hamer's review is that London typhoid for the past 25 years has been in the main of estuarial origin. He discussed certain supposed milk outbreaks, excluding those involving less than 20 cases, and those in which it was stated that less than 95 per cent. of the sufferers were consumers of the suspected milk. Of 110 outbreaks, collected mostly from records in the British Isles, only 22 passed these tests. It was apparent in these records that no study of other possible food infections had been made, and the milk theory could only be accepted *faute de mieux*. A percentage of even 100 consumers affected might well not justify this theory. An early outbreak attributed to milk was that reported by Dr. M. W. Taylor, in the *Edinburgh Medical Journal*, 1857–58, and Dr. Hamer concluded from a study of this report that the disease was probably typhus and not typhoid. Almost the first case published was that of the Islington outbreak of 1870, reported on by Dr. Ballard. Dr. Hamer concluded from his analysis of this report that the distribution of infected fish or shell-fish was a possible explanation of the outbreak. He also pointed out various difficulties connected with the attribution of the Marylebone outbreak of 1873 to milk, remarking that an investigation of the incidence of illness upon customers of a certain fish shop a few yards from the suspected dairy might have been of considerable interest. He referred to other outbreaks attributed to milk, maintaining that the relationship might have been explained as a coincidence. Again, in 1891 four groups of cases in Rotherhithe, Deptford, and Greenwich were reported on by Dr. George Turner, and a prima facie case was made out against certain ice-cream supplies. Dr. Hamer submitted reasons for regarding these and other outbreaks in London at about the same time as being possibly due to infected shell-fish or other fish. He had investigated a Finsbury outbreak in 1911 with Dr. A. E. Thomas, and was able to show that ice-cream was not at fault, as was at first suspected, but a fried-fish shop just opposite that of the ice-cream vendor. Finally, he referred to a Plumstead outbreak in 1895, which he investigated with Dr. Sidney Davies, and accepted at the time as a milk outbreak. Some years later he learnt that the suspected dairy was next door to a fish vendor, and from the incidence of the case the explanation was a matter of doubt. Dr. Hamer claimed that this examination of reputed London milk outbreaks confirmed the view held by Creighton that if milk must be deemed a cause of typhoid epidemics, it could only be held responsible for certain aberrant prevalences of a typhoid-like disease, and was not a significant factor in the spread of true typhoid fever. He said that high typhoid death-rates were to be found in coastal areas or in areas within easy road or rail communication with these, or with centres of fish distribution. The areas with low typhoid rates were almost without exception remote from such districts, and this was all the more striking because these areas were just those where primitive methods of drainage and water-supply still prevailed. Dr. Hamer concluded "that a bird's-eye view yields unmistakable indication that, at any rate, during the last 25 years, the mischief responsible for London typhoid has been found in some remote estuary or on some far distant foreshore."

THE HOSPITAL FOR TROPICAL DISEASES.

OWING to the depression of trade the number of cases of tropical disease admitted to the London Hospital for Tropical Diseases from the docks and ships in port has become small. It is important to secure sufficient clinical material for study in London and for teaching purposes, and a leaflet has been issued by the hospital, in association with the London School of Tropical Medicine, explaining that patients suffering from any form of tropical disease may make application to the secretary for treatment, special arrangements being made for women and children. Those who can afford it are expected to pay towards the cost of their treatment, and suitable cases are accommodated in private wards. The hospital offers special facilities to those who are taken ill on board ship or who are invalided from the tropics with malaria, dysentery, sprue, or with any form of fever or tropical disease, and arrangements can be made to receive them straight from the ship. The honorary medical staff will be glad to hear from medical officers in the services, or in private practice, with regard to patients needing expert treatment.

The Hospital for Tropical Diseases is now situated in Endsleigh Gardens, Euston Square, N.W., within easy reach of several main London termini, while an ambulance service is maintained between the new hospital and the old one in the Albert Docks, where the school once stood. Cases are admitted there straight from the ships in the East London Docks.

THE Federation of Medical and Allied Societies has now moved into new offices at 12, Stratford-place, Oxford-street, London, W. 1.

THE news is announced of the death of Dr. Theodore Schott, well known for his treatment at Bad-Nauheim of cardiac disease.

THE Guild of St. Luke Annual Service will this year take the form of a special thanksgiving for peace. The service will be held on Tuesday, Oct. 18th, at 7 P.M., the preacher being the Rev. Father Waggett. The offerings, after defraying the cost of the service, will be devoted to one of the hospitals in London. Doctors and students are requested to wear academic dress.

WE publish this week (p. 833) a plea for the better use of vital statistics in public health by Sir Arthur Newsholme, formerly Principal Medical Officer to the Local Government Board. The address was delivered at a dinner held in Sir Arthur Newsholme's honour by the American Statistical Society on the eve of his departure for England.

Sir Marriott Cooke and Dr. Sidney Coupland, consulting physician to the Middlesex Hospital, have retired from their position as Commissioners of the Board of Control. Both of them were appointed Commissioners in Lunacy in 1898, and the former, who was previously medical superintendent of the Worcester County and City and the Wiltshire Asylums, acted during 1916–18 as chairman of the Board.

THE LANCET of January 1st, 1921.

THE Manager will be obliged to readers who have not any further use for their copy of THE LANCET of the above date if they will kindly return it to him at 1, Bedford-street, Strand, W.C.2. The postage on the number is three halfpence. He will be pleased to pay for those returned.

OPENING OF THE SESSION AT THE MEDICAL SCHOOLS.

THE DRAMATIC SIDE OF SURGERY.

THE introductory address at the opening of the winter session of the Middlesex Hospital Medical School was delivered by Mr. GORLON TAYLOR at the Scala Theatre on Oct. 4th. He chose as his subject, "The Dramatic Side of Surgery." After referring to some of the spectacular episodes of civil surgical practice, Mr. Gordon Taylor went on to describe in detail the brilliant achievements of surgeons during the war. The aeroplane proved of great value as a means of rapid transit, and in this connexion Mr. Gordon Taylor said: "The French conceived the idea of having aerial ambulances in order to quickly convey the wounded—especially the gunshot wounds of abdomen and chest—from the 'aid-posts' just behind the firing line to hospitals well equipped for dealing with such cases. Nemirovsky and Tilmant organised an aeroplane which they named the 'aerochir,' on the analogy of the 'autochir,' to carry a pilot, a surgeon, and a radiographer who could act as a surgical assistant. This 'aerochir' carried X ray apparatus, steriliser, instruments, dressings, &c. By its means it was thought (1) that surgical aid could be brought to the patient quickly; (2) the surgeon could be brought to the patient, and not the patient to the surgeon, and the patient thereby saved a journey before receiving surgical aid; (3) it would not increase traffic on roads used for purely military purposes; (4) formations of aeroplanes could rapidly transfer surgeons from one part of the fighting line to another."

Similar methods were also in use, said the lecturer, in the British army. The surroundings in which surgical work was accomplished might lend the dramatic touch; thus, said Mr. Gordon Taylor: "It is difficult to imagine a more dramatic environment for surgery than the dug-out which Basil Hughes, of Bradford, built in a communication trench when he was a regimental medical officer; to this a wounded man could be brought in four or five minutes after being hit. Six abdominal cases associated with severe hæmorrhage were operated upon by Hughes here, and two recovered; these were men, who, in his opinion, would never have lived to see a casualty clearing station." Mr. Gordon Taylor recorded several instances of soldiers who received penetrating abdominal wounds on two occasions and recovered from each, and he also considered wounds involving two or more of the body cavities. With regard to abdominal wounds Mr. Gordon Taylor said: "The results of abdominal wounds operated upon by average surgeons in the war showed a recovery rate of about 50 per cent., if these cases were selected with some care; naturally the recovery rate was lower where the surgeon exercised less discretion in his choice of cases, or was willing to extend the benefits of surgery to patients however desperate their condition. Douglas Taylor and Geoffrey Marshall's 74 per cent. recovery rate in one series of 101 cases was the most striking ever obtained. The statistics of abdomino-thoracic wounds in the earlier years of the war were gloomy reading, but out of 207 cases of this type operated upon in the Fourth Army in 1918 which I collected and analysed, 66·6 per cent. got well." Blood transfusion was now becoming an everyday operation, and Mr. Gordon Taylor related cases that had occurred in his practice, in which transfusion had saved the patient's life, and also referred to the difficulty sometimes experienced in civil hospital practice in obtaining a suitable donor. Amongst other dramatic operations performed he mentioned the successful removal of a rifle bullet from the intrapericardial portion of the inferior vena cava by Pierre Duval, and the resection of large portions of the intestines in cases of abdominal wounds.

The Middlesex Hospital, said the lecturer, was intimately connected with the history of calculus surgery. In 1880 Sir Henry Morris was the first to perform nephrolithotomy, in 1891 Sir John Bland-Sutton carried out the second successful choledochotomy in this country, and in 1891 Sir Alfred Pearce Gould first removed a stone from the pancreas. The dramatic and spectacular operation of lithotomy was now replaced, wherever possible, by litholapaxy. In conclusion Mr. Gordon Taylor said: "Time fails me to speak of many other dramatic operations performed during the war, nor do I desire to harrow your feelings with Grand Guignol tales. I could speak of an air pilot with a severely damaged heart bringing his aeroplane safe to the ground, of soldiers walking back with protruding bowel to their own lines to recover with the aid of surgery, of occasional bayonet wounds involving even the bowel successfully treated, and we many of us have successfully extracted curious missiles from the wound of the injured soldier—pennies, francs, buttons, the finger of a comrade, and even fragments of the pages of the Continental *Daily Mail*."

PROFESSIONAL TRAINING IN PHARMACY.

THE inaugural sessional address of the School of Pharmacy of the Pharmaceutical Society of Great Britain was delivered on Oct. 5th by Lieut.-Colonel Sir DAVID PRAIN, C.M.G., F.R.S., Director, Royal Botanic Gardens, Kew.

"On the occasion of the opening of a new session," said Sir David Prain, "one's thoughts naturally turn to the studies that lie before one. Between the preliminary assessment of knowledge gained at school and the qualifying examination on the completion of the professional studies three separate disciplines intervene as set out in the various suggested compulsory curricula: (1) A training in pure science; (2) a pupilage in pharmacy; and (3) a course of professional studies." Five years ago, the then president of the Pharmaceutical Society stated in an inaugural address that it had been the policy of the Society to reverse the order of the first two. Sir David Prain felt this to be an encouragement to himself, as during 16 years he had adopted a similar order in the training of student-gardeners. Proceeding to deal with professional training in general, he said that conflict between theory and practice was impossible. Even in cases where exponents of a craft seemed to accomplish their tasks without the conscious study of underlying principles, these principles still existed, and the most consummate master of practice could not fail to benefit by the study of principles.

In medicine practical pupilage was the method originally adopted. The necessity for a knowledge of underlying principles of chemistry, physics, and biology soon impressed itself upon the profession and a "course of professional studies" was instituted and expanded at the expense of pupilage until the latter disappeared. Medicine found that professional training gave better results than pupilage; but since such training did not afford the opportunity for education which pupilage gave, a preliminary training in pure science was prefixed to the professional studies when pupilage ceased. This policy interested the pharmacist because certain prominent men had advocated its adoption, in view of the fact that pupilage in pharmacy may ultimately disappear as it has done in medicine. While pupilage remained the present policy of the Society seemed preferable. When pharmacy had to devise a new policy she might study the example set by medicine with advantage.

Husbandry and pharmacy had their origin side by side. Husbandry aimed at the maintenance of health while the function of pharmacy was to relieve sickness. Neither of these crafts fulfilled its purpose completely, and medicine was invented as an art directed towards the prevention of disease and later to its cure. Finally medicine passed from the defensive to the offensive, and now attempts to abolish disease. The secondary object of medicine

being the cure of disease, pharmacy was no longer called upon to relieve its symptoms, but still had to provide the necessary materia. Sir David Prain pointed out that pharmacy concentrates upon the "qualities" of the materia, while medicine studies their "uses." Should the new policy of medicine succeed, these materia would be converted into historic lumber, and pharmacy must undergo a corresponding modification. In husbandry the desirability of a practical pupilage had not yet been questioned. Still, the question had resulted in two schools of thought: some regard practice alone as sufficient training, while others prefer practice with science, but maintain that practice should precede training in pure science. Among those who advocate training in pure science there was again a divergence of opinion. Some think that practice and scientific training should proceed concurrently, while others prefer that practical pupilage should precede the course in pure science. In schools of agriculture the result of experience had led, in some cases, to the abandonment of the concurrent system at one time adopted, and in future only such pupils would be admitted as had undergone a prescribed minimum of practical training. In horticulture, generally speaking, nothing was allowed to interfere with the practical pupilage which, on completion, was followed by the study of pure sciences.

Sir David Prain explained that in callings like pharmacy and garden-craft four distinct types of training were to be found: practical pupilage alone or a training in pure science (1) as a prelude, (2) as a complement, or (3) as a supplement to practical pupilage. Pupilage alone was both instructive and educatory, but education suffered because the primary aim of the teacher was instruction in the art of doing things, the pupil being largely left to his own devices to learn the underlying principles. Science before practice was good in theory, but might fail in practice because there was a tendency to put the apparently burdensome pure science entirely on one side when the examination had been passed and to forget the distasteful study as rapidly as possible. The objection to pursuing science concurrently with practice was that it is best to do one thing at a time. The interest of a good pupil in his calling was so intense that it absorbed his attention so fully as to render him incapable of giving proper attention to the underlying sciences. Science after practice seemed to be the ideal arrangement. The pupil had made his craft a part of his individuality, and immediately grasped the relevance of the scientific facts now placed before him. He would follow his studies with a keenness and interest that made them a pleasure alike to teacher and taught. Should pharmacy find herself eventually compelled to abandon pupilage as medicine had done, she might, as regards physics and chemistry, rely upon the aid of academic science, as did agriculture and medicine. But so far as biology was concerned she would do well to impart the scientific training on her own account, because the academic treatment did not fully meet the requirements of pharmacy. When the course of study was over training was not at an end. In a sense it was here that real training began. An attempt to prosecute "original research" would amply reward the worker in teaching him his own limitations and in leading him to know himself, while at the same time it might add something to our knowledge of natural things.

UNIVERSITY OF BIRMINGHAM.—The opening of this session marks the attainment of the majority of the University, which was founded in 1900 from the pre-existing Mason University College. On Oct. 7th a conversazione, held in the University buildings, was attended by a very large number of members of the University and its friends. All the departments were thrown open to inspection and many interesting exhibitions and experiments were shown. On Sunday, Oct. 9th, the annual service was held in the Great Hall at Edgbaston to mark the inauguration of the new session.

STATE CARE OF MENTAL DISORDER.

ANNUAL REPORT OF THE BOARD OF CONTROL (LUNACY AND MENTAL DEFICIENCY) FOR 1920.

THE Board of Control for England and Wales must be one of the most harassed of Government departments. On Jan. 1st, 1921, there were 120,344 notified insane under care; each member has about 10,000 mentally infirm patients to supervise (provided all the members take an equal share in the work). The nine visiting members must each see about 13,000 annually, whereas in Scotland the proportion of patients to each Commissioner appears from the Seventh Report of the Scottish Board of Control to be less than 3000.

The Commissioners and their Responsibilities.

The work of the Commissioners involves the examination of all certificates so as to be sure that the law is complied with in every case. Each of these patients has a right of appeal, and when claims for discharge cannot be entertained there is often aroused a feeling of resentment which later finds its expression in letters to the papers and occasionally in vindictive attacks. Although personal violence is rare, aggrieved ex-patients lose no opportunity of creating ill-feeling. The Board of Control is, therefore, always up against an accumulation of grievances and complaints which create prejudice and ill-will. This is not counteracted by a corresponding show of gratitude, as patients do not attribute their recovery to the Board. It might be said that in this respect the Commissioners are like magistrates and judges, but there is the difference that in one case there is a public inquiry and the accused has counsel to defend him, whereas no such opportunity is given to the patient complaining of his detention. We do not suggest that patients are wrongly detained or that proper care is not taken, but merely that the prejudice which exists might be mollified if some different procedure were adopted when complaints of detention were made. In Dr. Montague Lomax's book there is a significant passage which describes the visit of the Commissioners and the supercilious air of the medical superintendent who took them round. The window-dressing which preceded the visit is described at length, and so it would seem that in this asylum, at any rate, care was taken to make a good impression. If typical, this seems to indicate a wrong state of affairs. If the Commissioners are merely inspectors and the chief medical officer on the defensive the visit can do little good. The association of legal and medical commissioners may be unfortunate. It is difficult for a barrister to take the place of a consulting physician in involved medical cases. In 1848, when the Commissioners were first appointed, there were terrible abuses to be eradicated, and presumably it was necessary to make minute inspection of rooms to see whether patients were concealed, but surely all this is changed, and if there are any abuses those responsible for the management of the institution are just as anxious for their removal as the Government visitors. This year Part II. of the Blue-book, which contains extracts from the Visiting Commissioners reports, has not been published.

Provision for Incipient Mental Disease.

A report by a Government body is hardly the place to look for defects in the Act of Parliament which it is required to administer. The necessity for change is admitted, and the Board again expresses its approval of a change in the law, in order to give improved facilities for treatment of early and incipient cases of insanity. The hope is expressed that a comprehensive measure on the subject will again be submitted to Parliament at an early date. [The Ministry of Health (Miscellaneous Provisions Bill, Clause 10) was refused a second reading in the House of Lords on Dec. 14th.] One aspect of this difficult subject seems so clear and obvious that it is strange

nothing has been done. There were in England on Jan. 1st, 1921, 94 county and borough asylums equipped and possessing a trained staff, and provided by the community for the express purpose of treating mental disease. Not one of these can receive a voluntary patient. If anyone feeling in danger of a breakdown applies for treatment, he can only be told to go away and get certified. Should he not be certifiable, he must keep away from the public mental hospital until he has got so bad that even a justice of the peace can see he is insane. Something is being done in this direction in the out-patient departments of one or two of the London hospitals and at Wakefield, and if the London County Council get the Maudsley Hospital into running order more might be done there, but these are mere drops in the ocean of what is required. The Commissioners in their report seem to confine themselves to things as they are. They would, we feel sure, disarm criticism and advance reforms by pointing out defects in the present system.

Training of Mental Nurses.—Inquiries into Alleged Abuse.

Nothing in the report is said of the training of the nurses or the labour it involves, nor is there any comment on the reduction of hours or the introduction and the working of the three-shift system in some asylums. The Board in this matter is in the position of trustee for the patients, and should express an opinion on agreements made between the asylums committee and the staff where they affect the welfare of the patient. They support and advise the nursing of male patients by female nurses in all suitable cases and when structural conditions permit of it.

An account of two inquiries into alleged abuses is given, the first into conditions at the Lancashire Asylum, Prestwich. The charges of ill-treatment and improper detention were made by a deputation headed by Mr. Ben Tillett, M.P. The charges were found to be without foundation. Only 11 patients made complaints which were not obviously due to their insanity, and even in these cases no substantial basis was found. The members of the deputation were invited to meet the Board and be present at the inquiry. Mr. Tillett pleaded urgent business elsewhere, and the others failed to turn up.

The second series of charges were made in "The Friend," and arose from statements made at a meeting of the Society of Friends by four conscientious objectors who served as attendants as alternative to war service. The Board admit that some of the charges were true, but point out that the complainants saw asylum life under abnormal conditions. Staffs were entirely inadequate and many members were totally unsuited for the work. Food was, of course, controlled. The Board deprecate any form of "correctional treatment" and urge its entire abolition.

The Effect of Economic Conditions on the Care of the Insane.

There is reason to fear that at the present time the insane are not as well looked after as they were before the war, but for this the Board cannot be held responsible. It is purely an economic question. The worker has asked for and obtained shorter hours and higher pay. The taxpayer grumbles, and the obvious ways of reducing expenses are smaller staffs and economies on food, and so the patients suffer. In referring to deficiency of diet it may be noted that the Board states: "Complaints of the quality, sameness, and cooking of the food and methods of serving it have been more frequent, and in some instances certainly justified. Whenever we have found this to be the case we have pressed for improvement; but it is a matter with regard to which we have found some of the visiting committees and their medical superintendents not as ready to adopt our suggestions as could be wished." The average weekly cost of maintenance for year ending March 31st, 1920, was in county asylums, £1 1*s.* 10½*d.*; in borough, £1 3*s.* 9½*d.*, excluding costs of repairs, additions, and alterations. This is an increase of 5*s.* 6¾*d.* in the previous year, and in six years of 100 per cent.

Prosecutions Undertaken by the Board.

Six prosecutions were undertaken by the Board. Five of these were against persons who had been employed in various asylums. In all cases convictions were obtained.

As is usual in law, offences against property were much more heavily punished than offences against the person. Two men were sentenced to six months' hard labour for stealing £8 8*s.* 6*d.* from an ex-Service patient. The magistrate characterised their conduct as outrageous. Four persons summoned for ill-treating patients got off with sentences of £3, £5 or six weeks, £5, and £5 or one month.

The statistics generally show a reversion to pre-war conditions. There is an increase in the number of certified cases, but this only occurs in county and borough asylums; in all others there is a decrease. The total number of deaths were 8504—3565 fewer than in 1919, and 11,011 fewer than in 1918. The average death-rate on daily average number of patients is 8·64 per cent. This is the lowest ever recorded; this, perhaps, is directly consequent upon the abnormally high death-rate in recent years.

Research Work.

Grants for research were made for the year ending March 31st, 1921, to the amount of £1700. This amount is divided among six workers in sums varying from £150 to £400 per annum. In a supplement to the report, a record is given of (*a*) Grant Aided Research Work. This contains an excellent account of an investigation in an outbreak of pellagra. (*b*) Scientific Research Work in Asylums in 1920. This includes an account of six investigations in various asylums. We know that this is not all the research work that has been done during 1920. Why, then, have these six only been selected? It is right that in all cases where a grant has been made an account should appear in the report, but it is disheartening to other workers that it should appear as if these accounts described all the scientific research at present proceeding. Much excellent and far-reaching work is being done elsewhere on such subjects as the endocrines, metabolism, and investigations in the ovaries and testes in dementia præcox.

The Report of the Board of Control may be had, price 1*s.* 6*d.*, from H.M. Stationery Office. Part II., which is not published for reasons of economy may be consulted at the Offices of the Board.

INDIA.

(FROM OUR OWN CORRESPONDENT.)

Madras Medical College: Prize Distribution.

THE Hon. Dewan Bahadur P. Ramarayaningar, Minister in charge of the Medical Department, presided at the eighty-sixth annual prize distribution to the students of the Medical College, held on August 19th in the College Library Hall. Colonel F. F. Elwes, principal of the college, read the annual report for the year 1920–21, which was a record of good work. The total number of students was 579, against 523 the previous year, and he announced that to accommodate this number the college had strained its resources to the utmost. He added that further increase in the number of admissions was impossible, unless great extensions were made to the present buildings, or unless a new medical college was built. The present college was originally opened for the training of military (assistant) surgeons, but now accommodates not only them and university students, but also the lady apothecary, sanitary inspectors, and pharmacy classes. He pointed out that in a modern medical college there is no place for such addenda.

In a speech delivered after the distribution of certificates of honour, prizes, and medals, the Minister said that he was glad to see a number of women graduates as there was a great demand for women doctors and health visitors throughout the Presidency; all women workers were needed to combat the appalling rate of infant mortality. The Government were considering the establishment of a new college in Madras or in the *mofussil*. Referring to the prospects in the medical services he said these had been recently improved. The pay of both assistant surgeons and sub-assistant surgeons had been increased, and this should be a real source of encouragement to them. The more students were passed out of the college the better assured would be improvement in public health. He asked them not to think of non-coöperation; if they coöperated they could extend medical relief to the remotest corners of the Presidency. Mr. Gandhi would advise them to boycott Government medical institutions on the ground that the medical relief given was different from what the people desired. If they adopted Mr. Gandhi's advice, the world, for them, would come to an end.

The Surgeon-General (Lieut.-Colonel T. H. Symons), referring in the course of his speech to recent criticisms in the newspapers—especially those relating to stipends—said that these criticisms expressed only half-truths. When a student received a stipend, the Government put the student through his medical course, and asked the student in return to sign a bond to serve for a term of years in the department. When he got a lucrative practice, he was at liberty to repay the stipend. There was no indenture in this. Nor did the students come under martial law, as had been announced. These mis-statements might create an impression in the minds of the readers that Government did not deal fairly with the students. On the contrary, but for Government help, there was no denying that many of them could not possibly enter the profession at all. Medical training in India was easily bought, easily paid for, and never appreciated. In England it was very different.

Madras, Sept. 14th.

LONDON MEDICAL EXHIBITION.

THE eleventh London Medical Exhibition held at the Central Hall, Westminster, from Oct. 3rd to the 7th provided an almost bewildering display of fine chemicals, foods, medical and surgical instruments, and apparatus. The general practitioner and the specialist alike could find exhibits of absorbing interest, and every stall was surrounded by eager medical men and women anxious to see and hear about all the newest and up-to-date in armamentarium. Nor were physical needs forgotten, for excellent teas and cigarettes were provided free in the tea-room set aside for members of the profession and their friends.

In only one respect we think could the Exhibition have been improved: there seemed to be no definite plan in the arrangement of the stalls. In these days it is rare to find any medical man who has not some pet specialty, and busy people who could only spare an hour or two necessarily missed much that would have interested them. On future occasions it would be an improvement to have exhibits of a like nature grouped together.

Surgical, Medical, and Publishers' Exhibits.

It would be impossible in a short space to describe even a small proportion of the exhibits in detail.

Meyer and Phelps showed a new gag for use during tonsil operations, the new Laforce hæmostatic guillotine, Dr. Irwin Moore's direct vision œsophagoscope with distal lighting, and Gillies's modification of Kilner's retractor for Thiersch skin-grafting amongst a profusion of surgical instruments of all descriptions.

H. E. Curtis and Son exhibited their well-known abdominal support; a new modification made of celluloid with washable covers seems very practical.

E. A. Brook Williams stall was replete with the latest text-books and monographs on medical subjects.

Allen and Hanburys, Ltd., were showing, amongst other surgical instruments, Thomson Walker's bladder retractor with Clifford Merson's lighting attachment and Swift Joly's direct vision posterior urethroscope. London Hospital catgut and Soutar's needle also attracted much attention.

The Tintometer, Ltd., showed ingenious colour scale apparatus and Dr. George Oliver's hæmoglobinometer.

Hawksley and Sons showed scientific, physiological and acoustic instruments of every description.

Various types of medical atomisers and sprays manufactured by De Vilbiss Co., Ltd., were on exhibition on Stand 26.

Charles Hearson and Co., Ltd., showed, amongst other exhibits, apparatus for small laboratories suitable for medical men doing bacteriological and venereal work.

Baillière, Tindall and Cox displayed a selection of medical and surgical works including the English edition of Doyen's Surgical Therapeutics and Operative Technique.

The latest X ray apparatus both for radiography and therapeutics was to be found amongst the exhibits of X Rays, Ltd. Here we saw also a number of single flash bismuth meal radiograms by a London radiologist, printed on Wellington X ray paper. The clearness and brilliancy of these prints renders them particularly suitable for diagnostic purposes; and the Wellington X ray plate on account of its great speed is specially adapted for single flash radiography.

Jaeger underwear and outer wear was exhibited on Stand 51.

The Domen Belt Co. exhibited a variety of belts for pregnancy, umbilical hernia, floating kidney, and other purposes.

Stronglite arms made by Cory and Grundy proved very interesting and were demonstrated to great advantage by an armless man, who, we were informed, had only within the last day or two worn the arm.

The new Bard-Parker knife, a Record syringe for export with replaceable barrels, the obstetric helper, and Barton's sphygmomanometer were to be seen at the Surgical Manufacturing Co.'s stall. The same firm also showed their "Excel" portable operating table, which folds down into a small space and weighs about 27 pounds.

Various appliances for deformities of the feet were shown by the Scholl Manufacturing Company.

At the Gas Light and Coke Company's stall was demonstrated the new economy gas flue, which has the triple advantages of reducing building construction, improving ventilation, and removing unhygienic corners.

H. K. Lewis and Co. showed not only a number of recent standard works but also a special selection of medical stationery.

The Sanborn Company exhibited a number of pieces of apparatus, amongst which was Benedict's metabolism apparatus for determining basal metabolism.

The Oxford Medical Publications stall was crowded with their well-known publications in medical, surgical, and general science.

A number of electrical aids for the deaf of various pitches were exhibited by W. H. Pettifer, as well as trumpets, tubes, and sound collectors.

Leoline Edwards, of Twickenham, exhibited an electric lamp heater which could be used for various other purposes.

Stanley Phillips, booksellers, were selling a selection of the latest medical books for post-graduate students.

Some interesting examples of the Eastman Dupli-Tized X Ray Film were shown by Kodak, Ltd. Amongst these we noticed a negative showing visible gall-stones.

The products of Carl Zeiss, Jena, were demonstrated by J. W. Atha and Co., sole agents for the British Empire. Every form of optical instrument, from microscopes to glass artificial eyes, was on view here.

An excellent electrical steriliser provided with a safety fuse, known as the Wilmot-Castle, was shown by De Trey and Co., who also exhibited various dental apparatus.

The Aurorascope Co., Ltd., showed their pocket outfit, by means of which the ear, mouth, nose and throat can be examined without the use of a dark room.

The Sterling Corporation, Ltd., had on view portable high-frequency violet ray generators and other electrical specialties.

Non-inflammable celluloid known as pexuloid, suitable for orthopædic appliances, was exhibited by Beckett and Bird, Ltd., one of whose factories is at the Ministry of Pensions special hospital at Shepherd's Bush.

A. G. Sheldon and Co.'s exhibit consisted of sterilised surgical dressings, the supply of which at any hour of the night or day is this firm's specialty.

The Pringle and Kirk mechanical arm and safety leg, fitted with an automatic knee-lock, were exhibited by the "P. K. Arm, Ltd."

Arnold and Son's exhibit took the form of a complete operating theatre in which the Royal operating table was conspicuous.

More medical books, including a number of new works on surgery, pathology, and venereal diseases, were exhibited by Wm. Heinemann, Ltd.

John Bell and Croyden, Ltd., displayed their sterilised dressings in hermetically sealed patent drums, ready for immediate use for accouchements and surgical operations, and various ligature and suture materials.

A comprehensive selection of the latest designs in electro-medical apparatus, including the "Pleurostat" universal apparatus providing currents for galvanism, ionic medication, electrolysis, cautery, lights, sinusoidal current, and faradisation, were on view at the stall of the Cox-Cavendish Electrical Company, Ltd. The same firm make a special X ray plate, the "Impex," by means of which instantaneous radiography may be undertaken with a gas-filled tube.

The Engineering and Survey Company exhibited X ray apparatus and special furnaces for the dental profession.

Epidiascopes, microscopes, and photo-micrographic apparatus were shown by Ogilvie and Co.

D. J. Taunton, Ltd., had no less than five stands filled with hospital furniture.

Radiant heat appliances for the treatment of rheumatism and allied disorders, as well as fractures and skin affections, were explained to those interested at the stand of the Dowsing Radiant Heat Co., Ltd.

The British Thomson-Houston Company's stand was devoted chiefly to the Coolidge portable X ray outfit and tubes.

The commendable work of the Food Education Society became evident from a study of their publications on dietetics at Stand 147.

Hoskins's hospital beds and equipment were exhibited by Hoskins and Sewell, Ltd.

Scientific Supplies, Ltd., showed a selection of glass-ware for medical and scientific purposes.

FOOD AND DRUG SECTIONS.

Foods.

At the exhibit of "Glaxo," Osnaburgh-street, London, N.W.1, useful information is provided regarding this dried milk, which can be obtained with full, three-quarter, or half normal cream content and is prepared in such a manner that the original vitamins present are not destroyed. Messrs. Horlick, Slough, Bucks, display their Malted Milk as a powder and in the more convenient form of tablets, whilst a somewhat similar product is exhibited by Messrs. Thew, Hooker, and Gilbey under the name of Hooker's Malted Milk. Genatosan, Ltd., of Derby-road, Loughborough, exhibit a readily assimilable tonic food "Sanatogen," prepared by a combination of casein and organically combined phosphorus, and the Sanagen Co., 8, Kennington Park-road, provide a closely related preparation known as "San-a-gen," containing the vitamins of the milk from which it is prepared. Other specialties of this firm include "Sanagen" Dietetic Biscuits and "Sanagen" Notan Tea Tablets.

Of the preparations exhibited containing the three vitamins A, B, and C, "Roboleine," supplied from the factory of Oppenheimer, Son and Co., Queen Victoria-street, E.C., and "Vitmar" manufactured by Callard and Co., 74, Regent-street, W. 1, may be referred to. "Maltine," a product derived from malted wheat, barley and oats, and possessing a high diastatic power, together with its various combinations with tonic, laxative, and other drugs, is shown by the Maltine Manufacturing Company, of 9, Holborn Viaduct. The use of liquid paraffin in combination with other substances for the purpose of rendering the oil palatable is exemplified in the preparation known as "Virolax," supplied by Virol, Limited, Old-street, London. This combined food and drug contains 40 per cent. of virol with which is emulsified 60 per cent. of paraffin, and is agreeable to most patients. Messrs. J. and J. Colman, Ltd., 108, Cannon-street, show cereal preparations for the feeding of infants and invalids, and their exhibit includes Colman's mustard, employed as a counter-irritant in addition to its dietetic uses, and Robinson's "Patent" Barley, Groats, and Waverley Oats. The Apollinaris Co., Ltd., Stratford-place, London, W. 1, show their two well-known mineral waters, "Apollinaris," a naturally carbonated table water, and "Apenta," a saline beverage used in the treatment of liver and bowel disorders. A large number of natural mineral waters are on view at the stand of Ingram and Royle, Ltd., Belvedere-road, S.E. 1, including Vichy-Celestins, Contrexeville, Carlsbad, Hunyadi-Janos, &c., and salts derived from some of these waters in the solid form for convenience in use.

Drugs.

A new anæsthetic exhibited by Savory and Moore, Ltd., under the name of "Ethanesal" (see THE LANCET, June 4th, p. 1173) prepared from highly purified ether is claimed to be superior to the usual anæsthetic ether or chloroform, being less toxic and irritating and causing less vomiting and other unpleasant after-effects. At the attractive stand of Allen and Hanburys, Ltd., attention was directed to their numerous organo-therapeutic products, the results of research work conducted by the firm. Of these products "Polyglandin," a compound granular preparation, has been found of service in nervous disorders such as arise at the menopause. The British Organotherapy Company, 22, Golden-square, W.1, also exhibit a wide range of similar products practically embracing the whole of such substances used in modern medical treatment. Notable among the many products supplied by Howards and Sons, Ilford, London, are "Agotan" (phenyl cinchoninic acid) the internal administration of which leads to an increased elimination of uric acid, cincaine (isopropylhydrocupreine) a local anæsthetic of low toxicity, and "Optochin" (thylhydrocupreine) a specific for several bacterial infections of the eye. Fine chemicals, principally derivatives of salicylic and benzoic acids, are displayed by Munley and James, Ltd., 64, Hatton-garden, E.C., and their specialty "Iodex," a preparation containing free iodine together with various medicaments derived from it, is given a prominent place.

An interesting exhibit is that arranged by British Colloids, Ltd., 22, Chenies-street, W.C. 1, where, by means of an ultramicroscope, the Brownian activity of their various colloidal products might be observed. The "Collosols" contain various metals, sulphur, and iodine, and possess the advantages over the same substances in the usual form, of higher therapeutic activity, and uniformity of action. The pharmaceutical products, vaccines, test cases, and other medical necessities furnished by W. Martindale, 10, New Cavendish-street, W.1, are in too great variety to be individually mentioned, although reference should be made to the salts of the chaulmoogric acids. Attention may also be drawn to the Extra Pharmacopœia of Martindale and Westcott now in the seventeenth edition, a mine of information in matters connected with the pharmaceutical and medical professions. Similar variety is shown in the many fine chemicals and other preparations exhibited by Burroughs, Wellcome and Co. in the form of "tabloids," "soloids," and other products. "Moogral" consists of a mixture of esters derived from acids of the chaulmoogric acid series and is the result of researches prosecuted by the company since 1904. Good results in the treatment of leprosy have been attained by the use of this preparation. Hedley and Co., Harrow-road, E. 11, show their chief product, ethyl chloride, and apparatus for producing general and local anæsthesia by its means. This substance is also used in their "Dridustol" spraying compositions, which are prepared by dissolving various drugs in this solvent. The solution when sprayed upon the skin rapidly evaporates, leaving a fine even deposit of the drug upon the surface.

Several vendors of liquid paraffin and its preparations are to be found amongst the exhibitors, but the firms principally restricting their exhibits to this medicament are the Anglo-American Oil Company, Bevis Marks, E.C. 3, who furnish a colourless and tasteless standardised product known as "Nujol"; the Angier Chemical Co., Ltd., 86, Clerkenwell-road, E.C. 1, proprietors of Angier's Emulsion containing 33 per cent. of paraffin emulsified with glycerine and hypophosphites of calcium and soda; and The W. Browning Co., Ltd., Albert-street, N.W. 1, whose "Semprolin" is obtainable as the refined oil or in the form of emulsions in combination with various drugs. The emulsions generally have an advantage over the plain oil in that they are miscible with aqueous liquids without separation.

The preparations exhibited by The Hoffmann-La Roche Chemical Works, Idol-lane, E.C. 3, include "Omnopon" a water-soluble powder containing the total opium alkaloids either alone or in combination with scopolamine for use in obstetric work, and "Sedobrol," which when dissolved in hot water forms a palatable broth, the seasoning being effected by sodium bromide (the active constituent) in place of common salt. This method of administration may be employed in all cases in which bromides are indicated. To the student of physiology or bio-chemistry the exhibit on this stand of various proteins, such as casein, hæmoglobin, &c., together with specimens of the compounds produced by their hydrolysis, will prove of interest. "Perkenol," shown by C. Zimmerman and Co., St. Mary-at-Hill, E.C. 3, is a convenient and useful product, which when dissolved in water yields a neutral solution of hydrogen peroxide of definite strength. Parke, Davis and Co., Beak-street, W. 1, Oppenheimer, Son and Co., and The Anglo-French Drug Co., Gray's Inn-road, exhibit a miscellaneous and interesting collection of general medicaments, colloidal preparations, disinfectants, organic therapy products, and vaccines which it is unnecessary to particularise.

A survey of the drug and food sections failed to show any new features of outstanding interest, but in spite of the present unrest and depression in various industries the production of numerous remedial and nutrient preparations appears to be in a thriving condition. Judging from the number of exhibitors displaying liquid paraffin B.P. and its many combina-

tions, this laxative must be in great favour at the present day, and it is of interest to notice the importance attached to the viscosity and specific gravity of the oil. The various makers of this preparation justly claim that their products are tasteless, but the objection of many patients is chiefly to the unpleasant oily sensation in the mouth caused by the pure oil and this physical characteristic is not likely to be overcome except by a judicious blending with other materials.

The results obtained in the many recent researches into vitamins are reflected in the exhibition by different firms of preparations which, it is claimed, contain the three essential food accessories.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

Glasgow.

THE report of Dr. A. K. Chalmers for 1920 is full of interesting matter. The population of Glasgow is estimated at 1,115,230. The inhabited houses number 235,034. The unoccupied houses which in 1913 numbered 18,710 are now only 291, of which 120 are one-apartment and 72 two-apartment houses. The birth-rate has risen from 23·18 in 1919 to 29·26 in 1920. The death-rate in 1920 was 15·03; the infant mortality rate 106: the death-rate from phthisis 1·06; and from all forms of tuberculosis 1·46. A special feature of the report is the account by Dr. A. S. M. MacGregor of the small-pox outbreak which has been brought up to date, the outbreak having terminated in March, 1921. In all 578 cases were dealt with, of whom all, except three who died at home, were treated in hospital. Of the 578 cases, 429 had been vaccinated, 128 had not been vaccinated, and 21 were said to have been vaccinated but presented no evidence whatever of a scar and were classed as doubtful. The fatality rate per cent. among the "vaccinated" was 16·1, among the "unvaccinated" 36·7, and among the "doubtfuls" 42·9. Anti-vaccinators will no doubt comment on the facts that more vaccinated than unvaccinated were attacked and that the fatality rate was greater among the "said to have been vaccinated" than among the unvaccinated. Of the nine deaths among the "doubtfuls," or "said to have been vaccinated," one occurred at the age period 15–20, one at the age period 35–45, and the remaining seven at age periods over 45, so it may be said without fear of contradiction that the "doubtfuls" died at an age when the transient protection afforded by a vaccination so inefficient as to leave no scar must have long ago passed away. It is well recognised that the protection afforded by infant vaccination is only temporary, and its value in warding off both attack and death is well shown by the statistics for cases under 15 years of age. Thus 30 vaccinated children under 15 years of age were attacked and none of them died; while 112 unvaccinated children under 15 were attacked and 38 of them died. Since the Vaccination Act (Scotland), 1907, was passed the proportion of successfully vaccinated children has fallen from over 80 per cent. to about 50 per cent., and the percentage of conscientious objections has gradually risen to 27 per cent. At the beginning of 1920, Dr. MacGregor estimates, there were about 127,000 unvaccinated children under 15 in Glasgow. Dr. MacGregor further estimates that 449,000 persons are now adequately protected and that there is therefore plenty of material for a further severe outbreak among the remaining inadequately protected 60 per cent. of the population.

Dr. MacGregor considers it essential to have chicken-pox added to the list of notifiable diseases during a small-pox outbreak, such notification to be followed by verification of the diagnosis in certain cases. By this means 13 cases of small-pox notified as chicken-pox were discovered. Dr. MacGregor was much struck by the manner in which efforts to control the epidemic were defeated by the occurrence of "missed" cases, and gives ten examples of patients who moved about freely among the population and who were only diagnosed when they caused recognised cases among their immediate contacts. The percentage of vaccinated cases with a sparse eruption is given as 56·5 and of unvaccinated as 12·3. It would be interesting to hear what proportion of the missed cases were unvaccinated.

Dr. Chalmers draws attention to the utterly inadequate provision for surgical tuberculosis. As modern treatment gives such promising results, it is to be hoped that this omission on the part of Glasgow, may, before long, be made good.

The work of the venereal disease treatment centres continues to grow. The number of new cases who received indoor treatment was 826 and out-patient treatment 5739. The corresponding numbers in 1919 were 748 and 4976. The average attendances per new case was 13·8, compared with 9·5 in 1919. Dr. Chalmers says: "It is a common observation that comparatively few (patients) will attend clinics until they become non-infective, but cease whenever pain or discomfort is lessened." At the Broomielaw centre Dr. Chalmers estimates that roughly 61 per cent. of the patients are defaulters in this respect and the attendance at Broomielaw is declared to be as good as elsewhere. Nevertheless Dr. Chalmers does not think that the time is ripe for demanding legislative powers to compel patients to remain under treatment until medically discharged, as proposed by the Corporation of Liverpool. Dr. Chalmers refers to the disconcerting evidence supplied by the number of new cases.

No case of total blindness resulted from ophthalmia neonatorum during the year, although in ten children the sight of one eye was lost and in four impaired, as was also the sight of both eyes in two other children.

Northamptonshire.

The estimated population of the administrative county for 1920 was 215,968 for birth-rate and 215,777 for death-rate. The birth-rate was 22·74, as compared with 14·34 in 1918 and 14·52 in 1919. The death-rate was 11·09. The infant mortality rate was 59, the lowest ever recorded. In the urban districts of the county it was 63 and in the rural districts 56. The tuberculosis death-rate was 0·94. There was a marked increase in the tuberculosis death-rate in the county during the war years, but this has now disappeared.

Housing schemes have made considerable progress in spite of the "grossly high" rates prevailing in the building trade. Dr. C. E. Paget records with satisfaction that many of the districts have arranged for the regular veterinary inspection of dairy cattle. We note that very inadequate penalties have been inflicted for the watering of milk.

Dr. Olivier Muriset, the tuberculosis officer, reports that a new method of diagnosis by tuberculin is being tried at the dispensaries and also that an X ray apparatus was purchased at the end of the year. Twenty shelters are loaned out by the county council. Much of the surgical tuberculosis work is done at the Northampton General Hospital. There is good coöperation between the tuberculosis officer, the district medical officers of health, and the school medical officers, and the medical practitioners use the dispensaries for consultant purposes.

Dr. Lila S. Greig submits a report on maternity and child welfare work. Collosol argentum is supplied to midwives deemed capable of using it. All the 27 notified cases of ophthalmia neonatorum made a good recovery. The number of still-births was only 1·5 per cent. of the live births in 1920 and 1·9 per cent. in 1919. Notification of artifical feeding is not yet properly observed by the midwives.

The percentage of infants breast-fed up to the end of the seventh month was 73·5 and has steadily increased from the year 1910, when the percentage was only 53·6. Dr. Greig attributes this satisfactory result in considerable measure to the distribution of free milk to nursing mothers. In order to diminish

overlapping the experiment is to be tried for two years of allowing the Northamptonshire District Nursing Association to carry out the health visiting in one of the districts, under the direction of the county medical officer of health and the lady medical officer. The V.D. clinic at the Northampton General Hospital has been now equipped for bacteriological and pathological work by a generous benefactor and the Buckinghamshire County Council have joined in the scheme.

Tunbridge Wells.

The estimated population for 1920 was 35,795, the birth-rate 18·3, the death-rate 12·5, the infant mortality rate 62·5, and the tuberculosis death-rate 0·97. 14·5 per cent. of the deaths were due to cancer. One does not expect to find the best mortality statistics in Tunbridge Wells, as its reputation as a health resort doubtless induces many invalids to take up their residence there.

Dr. F. C. Linton mentions that the maternity and child welfare work needs both proper premises and an increased staff, and draws attention to the fact that 21 of the 41 infant deaths occurred in the first week of life. Nine fresh cases of malaria were notified during the year; Dr. Linton repeats his warning of last year that *Anopheles maculipennis* is to be found in Tunbridge Wells, and asks that insects killed on suspicion of being anophelines be brought to the health office for identification, in order that the distribution of this insect in the borough may be ascertained.

Obituary.

SIR WILLIAM ROE HOOPER, K.C.S.I., F.R.C.S.ENG.,

COLONEL, I.M.S.; HONORARY SURGEON TO THE KING.

AN announcement was made in THE LANCET last week of the death at Aldeburgh, Suffolk, of Sir William Roe Hooper, a distinguished member of the Indian Medical Service. He was an officer who left his mark in India, where he spent the greater part of his professional life, before recall home to take up the important position of President of the Medical Board of the India Office.

Sir William Hooper had reached the ripe age of 84, for he was born in the year of Queen Victoria's accession to the throne. He received his medical education at St. Bartholomew's Hospital, qualifying as a Member of the Royal College of Surgeons of England in 1858. He entered the Indian Medical Service and for more than 30 years discharged important duties in the North-West Provinces. After 11 years' service in the Gaol Department, as Superintendent of the Central Prisons of Allahabad and Benares, he was in 1874 placed in medical charge of the latter important station and district. In August, 1891, as a reward for long and approved service, he was transferred to the civil surgeoncy of Lucknow, where he not only earned the approval of the Government but gained the confidence and affection of all classes of the European and native communities. In 1881 he received the special thanks of the Viceroy for the work which he had discharged, and between 1878 and 1893 on eight separate occasions he was thanked by the Government of the North-West Provinces of Bengal for his work at the hospitals and institutions under his charge. In a service which contains a long list of men who have given protracted years of incessant toil to the improvement of social hygiene and sanitary conditions in the Indian Empire, few names better deserve prominent recognition by his countrymen at home and in India than that of Hooper.

For a period of about 18 months during 1887–88, while on furlough, he had served as a member of the Medical Board at the India Office, and his appointment to the presidency of the Board in succession to Sir Joseph Fayrer was not unexpected. He retired in 1904 after an extension of his services for two years.

Among other offices which he held, all in direct connexion with his official work at the Board, he was an ex-officio member of the Senate of the Army Medical School, Netley, a representative of the India Office on the Committee to inquire into the organisation of the Army Medical Service appointed in 1901, a member of the Advisory Board for Army Medical Services, and of the Army Sanitary Committee. He also sat on the committee which prepared the new edition of the Nomenclature of Diseases, published under the ægis of the Royal College of Physicians of London. In 1897, while he was a member of the Council of the Lister Institute of Preventive Medicine, he received the C.S.I., and in 1903 was promoted to a Knight Commandership of this Order. In the following year he was gazetted honorary surgeon to the King.

Sir William Hooper married in 1859 Lucy, daughter of the late Mr. Henry Benson Cox, whom he survived. A son, Dr. John William Dunbar Hooper, is a gynæcologist practising in Melbourne.

ALBERT SIDNEY FRANKAU LEYTON, M.D., SC.D. CAMB., F.R.C.P. LOND., D.P.H.VICT.,

DIRECTOR OF THE CLINICAL LABORATORY, ADDENBROOKE'S HOSPITAL; LATE PROFESSOR OF PATHOLOGY IN THE UNIVERSITY OF LEEDS.

Albert Sidney Frankau Leyton, who died at his residence, Great Shelford, Cambridge, on Sept. 21st, at the age of 52, was born in London, the son of Joseph Grünbaum. He was educated at the City of London School, at St. Thomas's Hospital, and at Gonville and Caius College, Cambridge, where he graduated M.A. in 1895, proceeding to the M.D. degree two years later, and to the Sc.D. in 1913. He completed an arduous and successful course of study by work on the Continent, notably in Vienna. A year after graduating at Cambridge he became a Member of the Royal College of Physicians of London, and later obtained the Diploma in Public Health at the Victoria University of Manchester. For a time he was assistant physician to the Liverpool Hospital for Consumption, and subsequently became lecturer on experimental medicine at the University of Liverpool. In 1903, having in the meantime been elected F.R.C.P., he was appointed director of the cancer research undertaken in that city. He delivered the Goulstonian lectures of the Royal College of Physicians of London in 1903, taking for his subject the Theories of Immunity and their Clinical Application. The lectures were published in THE LANCET at the time of their delivery, and were recognised as a clear and useful guide to a whole section of pathology that was quite new to many clinical workers. For a time he was professor of pathology in the University of Leeds.

Dr. Leyton was a man of versatile capacity and wide interest in research, and in Vienna in 1896 he did a remarkable piece of work, for he clearly forestalled Widal in devising the agglutination test in typhoid fever. Leyton, however, delayed publication until he had had an opportunity of confirming his results, and meanwhile Widal published an account of the test from independent investigations.

Prof. C. S. Sherrington, with whom Leyton had worked at St. Thomas's Hospital on cerebral physiology, writes as follows:—

As one who knew Prof. Leyton well and was intimately associated with him in some of the work which he did, may I add a word of tribute to his memory? None who had close contact with him could fail to be impressed by features of his thought and character which make his relatively early death an untimely loss to scientific medicine. He combined in rare measure enthusiasm for research with a critical, and indeed, highly self-critical, attitude of mind. An earnest of his power of achievement was seen in his discovery of the agglutination reaction as a help to typhoid diagnosis, a discovery fraught with such high and still unexhausted consequences. Widely read and proficient, he was ever on the alert to take avail of means from the progress of collateral science for the immediate profit of medicine itself. He had imagination and at the same time no man endeavoured more sincerely than he to control theoretical suppositions by observational data. The advance of practical medicine was with him a passion; in his devotion

to that end he spared no labour or personal sacrifice. Though so much of his time and thought was given to laboratory work and technique, he was not one for whom these latter become per se the sole preoccupation. My recollection of him is of one for whom the interest of the laboratory was ancillary to and simply enhanced his interest in practical medicine. He was a man of high ideals, and to know him well was to realise the more his integrity of purpose, and his generous nature and the essential kindness of his heart.

To his widow, a medical woman who has worked closely with him and has published jointly with him articles in our columns, we extend our sympathy in her great loss.

WILLIAM DOMETT STONE, M.D. ST. AND., F.R.C.S. ENG.

DR. W. D. STONE, whose death in London on Oct. 1st we recorded briefly last week, was at one time an acknowledged authority on questions of public health, and he did much to educate public opinion in matters of hygiene and sanitation. Born in 1840, he received his medical education at Middlesex Hospital Medical School and qualified M.R.C.S. Eng. and L.S.A. in 1861, becoming M.D. of St. Andrews University in the following year. In 1865 he took the F.R.C.S. Eng. His early medical appointments included those of resident medical superintendent at the Munster House Asylum, Fulham, and of surgeon-superintendent for the Government Emigration Service. He also held the appointments of hon. physician to the Westminster General Dispensary, the Western General Dispensary, and the Finsbury Dispensary; and of surgeon to the St. Marylebone Dispensary. A great traveller, he visited many different parts of the world, and for his services in instituting an inquiry into the hygienic condition of the Mercantile Marine of Great Britain, Sweden, Russia, the United States of America, and other countries, the Council of the College of Physicians of Sweden conferred upon him, in 1872, its Honorary Membership. When, in 1865, THE LANCET appointed a commission to inquire into the state of workhouse hospitals he championed the cause of reform in the *Times* and did good work in bringing about an amelioration of the undesirable conditions which existed at that time in poor-law institutions. He pointed out that the education and general status of the masters was often inadequate to their position, and he urged that an alteration of the standard of requirements for the posts of master and matron should be the first step in the reform of poor-law infirmaries. Dr. Stone edited with ability for many years the Half-Yearly Abstract of the Medical Sciences, and was the author of an "Epitome of Therapeutics." Of late years, owing to failing health, he has lived in retirement, although always retaining a keen interest in current events.

ROBERT HALE TROTTER, M.D. VICT., M.B., CH.B. LEEDS, M.R.C.S. ENG., L.R.C.P. LOND.

DR. TROTTER, a well-known practitioner in Holmfirth, Huddersfield, died on Sept. 10th, aged only 48. The second son of the late Dr. Charles John Trotter, he came of a family which has been closely associated since the beginning of the last century with the life of Holmfirth, where he lived. He was educated at Huddersfield College and the University of Leeds, winning the gold medal of his year. He graduated M.B., Ch.B. with honours in 1895, and in the same year became M.R.C.S. Eng., L.R.C.P. Lond. He took the degree of M.D. in the Victoria University in 1901. Identifying himself with many of the public institutions of the neighbourhood of Holmfirth, Dr. Trotter took a special interest in the Holme Valley Memorial Hospital, which owed its inception mainly to his personal efforts. His first appointment was that of house surgeon to the General Infirmary, Leeds, and from 1896 to 1914 he was medical officer of health for Holmfirth, Honley, and Holme combined districts. Later, while in charge of the medical ward at Royds Hall, he was appointed temporary Major in the R.A.M.C. He contributed to our columns in 1918 a paper on the Treatment of Neurasthenic and Hysterical Cases in General Military Hospitals and another entitled "Observations upon Condition known as D.A.H."

At a memorial service held at the Parish Church Dr. H. W. Williams paid tribute to the abilities of Dr. Trotter, and Lieut.-Colonel W. L. W. Marshall writes that on the staff at the Huddersfield War Hospital Dr. Trotter proved "a most efficient officer, a loyal comrade, a true friend, and an able physician beloved by the sick and wounded under his care."

DEATH OF DR. FREDERICK WILLIAM HENRY PENFOLD.—Dr. F. W. H. Penfold, who died at his residence at Rainham, Kent, on Sept. 30th, in his 62nd year, received his medical education at Guy's Hospital, qualifying M.R.C.S. Eng. in 1884 and L.R.C.P. Edin. in 1891. He was district medical officer to the Milton Union and hon. physician for in-patients at St. Bartholomew's Hospital, Chatham.

THE LATE DR. GEORGE ROLPH RAINE.—Dr. G. R. Raine, who died at his residence in Victoria-road, Darlington, on Oct. 3rd, was the eldest son of the late Dr. G. W Raine, of Billericay, Essex, and received his medical education at Guy's Hospital, qualifying M.R.C.S. Eng. in 1866. He held appointments at Guy's Hospital and at the Staffordshire General Infirmary, graduating M.B. Lond. in 1867, becoming L.S.A. in 1868 and M.D. Lond. in 1879. At the time of his death Dr. Raine was hon. physician to the Darlington Hospital.

THE LATE DR. JOHN WILLIAMS JONES.—The death of Dr. J. W. Jones, of Whalley Range, Manchester, who recently retired from practice owing to ill-health, is reported from Prestatyn. Educated at Glasgow University, Dr. Jones qualified L.R.C.P., L.M., and L.R.C.S. Edin. in 1881. He took up practice at Middleton, and married a sister of the late Alderman J. W. Lees. Dr. Jones was medical officer and public vaccinator to the Second District of the Manchester Union, and a member of the Manchester Pathological Society.

THE LATE DR. HERBERT BURLAND.—Dr. Herbert Burland, who died recently at his residence in Wellingborough-road, Finedon, in his 58th year, studied medicine at the Victoria University and at the Royal Infirmary, Manchester. He qualified M.R.C.S. Eng., L.R.C.P. Lond. in 1888, and practised at Finedon for 33 years. He held several local appointments, being medical officer to the Cottage Homes, Burton Latimer, to the post office, and to the Finedon District of the Wellingborough Union, and also a certifying factory surgeon and referee to several assurance companies.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lieut.-Cdr. P. B. Wallis withdraws with gratuity.

The following appointments have been notified:—Surg. Comdrs. J. L. Barford to *Pembroke*, addl. (temp.); S. Roach to *Orion;* and R. W. Stanistreet to H.M. Dockyard, Chatham.

ROYAL ARMY MEDICAL CORPS.

Capt. E. F. W. Mackenzie to be temp. Maj. whilst specially empld. as D.A.D. of P.

The undermentioned Capts. are secd.:—D. W. Pailthorpe for service with the Egyptian Army. H. G. Monteith for service under the Colonial Office.

The undermentioned Capts. retire receiving a gratuity: W. W. MacNaught (granted the rank of Maj.) and Kenneth A. Maclean.

Temp. Capt. F. K. Kerr relinquishes the actg. rank of Lt.-Col.

Officers relinquishing their commns:—Temp. Majs. A. T. Todd and S. G. Bell (retain the rank of Maj.). Temp. Capts. J. B. T. Keswick and F. J. Waldmeier (retain the rank of Capt.).

ARMY DENTAL CORPS.

To be Lts., with the temp. rank of Capt. (but without the pay or allces. of that rank): Temp. Capt. T. Edwards, Dental Surg., from Spec. List; Temp. Capt. S. H. Woods, Dental Surg., from Gen. List.

TERRITORIAL ARMY.

Capt. J. L. Hamilton to be Maj.

Capt. D. C. Maclachlan (late R.A.M.C.) to be Capt.

Capt. T. P. Cole resigns his commn. and is granted the rank of Maj.

Capts. J. M. Stalker and J. H. Chauncy resign their commns. and retain the rank of Capt.

Lt. R. Ward to be Capt.

Surg. Lt. W. J. C. Watt (late R.N.) to be Lt.

TERRITORIAL ARMY RESERVE.

Maj. C. N. Smith (T.A. Res.) to be Maj.

INDIAN MEDICAL SERVICE.

Capt. J. Findlay to be actg. Maj. while holding an appt. as Registrar of an Ind. Gen. Hosp.

Captains to be Majors: E. H. V. Hodge, A. MacD. Dick (Bt. Maj.), M. J. Holgate, T. L. Bomford, G. R. Lynn, L. H. L. Mackenzie (Bt. Maj.), W. A. M. Jack, Keshav Sadashiv Thakur, Mohamed Abdur Rahman (Bt. Maj.), H. R. B. Gibson (Bt. Maj.), M. A. Nicholson, R. F. D. MacGregor (Bt. Maj.), E. W. O'G. Kirwan, P. K. Gilroy.

DEATHS IN THE SERVICES.

On Oct. 9th, at Queen Alexandra's Military Hospital, Millbank, Lieut.-Col. EDMUND MUNKHOUSE WILSON, C.M.G., D.S.O., R.A.M.C., died in the 67th year of his age. He qualified L.R.C.P. Lond., M.R.C.S. Eng., in 1878 from St. George's Hospital, and as a civil surgeon saw active service in the Zulu war in the following year. For his services he received the medal with clasp. In 1881 he joined the Army Medical Department, serving in the Nile Expeditions of 1884–86, and was awarded the medal with clasp and the Khedive's Star. During the Gambia Expedition of 1891–92 he gained the medal and clasp, and in the Ashanti Expedition of 1895–96 was honourably mentioned, receiving the C.M.G. and star. As secretary to the Surgeon-General in the Sudan Expedition to Khartoum in 1898 he was mentioned in despatches, awarded the D.S.O., and English and Sudan medals. From 1899 for five years he was Deputy Assistant Director-General of the Army Medical Service at headquarters, and was afterwards employed at the R.A.M.C. Record Office, his services extending into the period of the late war. Lieut.-Col. Wilson, who was created a Knight of Grace of the Order of St. John in 1903, was president of the West London Medico-Chirurgical Society during 1918–19, and was at one time secretary of the R.A.M.C. Benevolent Society.

Major-General PETER STEPHENSON TURNBULL, K.H.S., I.M.S. (retd.), died in Edinburgh on Oct. 7th, at the age of 85. He graduated M.D. at Glasgow in 1859, and joined the Indian Medical Service in the following year. He served in India under Lord Napier of Magdala in 1867–68. From 1882 to 1888 he was secretary to the P.M.O. of the Forces in Bombay, and from 1883 to 1885 also held the office of acting Inspector-General of Prisons in the Bombay Presidency. For five years he was Surgeon-General to the Governor of Bombay, and retired from the services in 1896, when he received the Good Service Pension. He was appointed hon. surgeon to the King in 1902.

Col. Sir WILLIAM ROE HOOPER, K.C.S.I., I.M.S. (retd.), Hon. Surgeon to the King, died on Sept. 29th, aged 84. He wa president of the India Office Medical Board from 1895 to 1904, and had served in India from 1859 to 1895. He received the Companionship of the Star of India in 1897, and was promoted to Knight Commander of that Order in 1903.

MANCHESTER RADIUM INSTITUTE: OPENING CEREMONY.—The Manchester and District Radium Institute, the first hospital of its kind in this country to be used exclusively for radium treatment, was opened by Lord Derby on Oct. 6th. The Institute, situated in Nelson-street, off Oxford-street, is in close proximity to the Royal Infirmary, the Royal Eye Hospital, and St. Mary's Hospital, and is the gift of Sir Edward and Lady Holt; in it will be concentrated most of the work formerly distributed amongst eight different institutions. During the first year of the Institute's existence, in 1915, there were over 2500 cases treated by radium; in 1920 the number rose to 8000; of these about two-thirds were treated for cancer in its various forms, but many of the cases had already reached an advanced stage before application was made for radium treatment. Sir Edward Holt remarked at the opening ceremony that, whatever doubts had been raised as to the curative value of radium in certain diseases, "the relief of suffering caused by its use is sufficient justification for our placing the Nelson House at the disposal of the Radium Committee." Experience at Manchester had shown that radium treatment might at least relieve the pain of cancer patients. A certain number of paying patients will be treated, and money received from this source will go to benefit the hospitals and poor people of Manchester and district.

Correspondence.

"Audi alteram partem."

INQUIRY INTO INSURANCE ACTS.

To the Editor of THE LANCET.

SIR,—THE LANCET of Oct. 8th contains a letter from the secretary of the Federation of Medical and Allied Societies, acting for his committee, in which a request is made to the Minister of Health "to consider the advisability of setting up an independent committee to take evidence in public, inquire into and report concerning the working of the National Health Insurance Acts." Among the signatories is the name of the secretary of the National Medical Union, acting for the council of that organisation. The Union consented to associate itself with the Federation *for this limited purpose only*. The wording of the preamble to this "request" is, however, capable of misconstruction as regards the National Medical Union, which, except in promoting this inquiry, is in no sense "coöperating in" the Federation in question. The Union is an independent body (in alliance with the Scottish Medical Guild), having its own policy, and founded in protest against the Medical Benefit Section of the National Insurance Acts.—I am, Sir, yours faithfully,

ALEXANDER BLACKHALL-MORISON,
Co-President (with Prof. Russell, of Edinburgh),
London, Oct. 8th. National Medical Union.

RESPIRATORY EFFICIENCY.

To the Editor of THE LANCET.

SIR,—There is much to be said in favour of the doubt expressed in the leading article in your issue of Oct. 8th as to whether "respiratory movements as such"—i.e., mere pulmonary gymnastics—have any special virtue as regards the promotion of physical efficiency. It has to be remembered that the quite admirable sets of exercises devised respectively by Sir Herman Weber and Wing-Commander Martin Flack are not merely exercises in pulmonary gymnastics: they bring practically the entire muscular system into play, and it may well be questioned whether their undoubtedly good effect is not primarily and essentially due to this muscular factor, and whether an equally good result might not be achieved by a system of exercises in which the breathing was left to look after itself. As you point out in the article referred to, "athletes, horses, and dogs are trained by progressive muscular exercises, and the teaching of trainers has often been in advance of scientific knowledge, or more correctly stated, their knowledge based upon experience has not been regarded as scientific. We have a right to ask the physiologist what is the true basis for the so-called breathing exercises; there is no apparent reason for taking in more oxygen than the body needs, or for discharging an undue amount of carbon dioxide."

Naturally those recruits who were put through a course of Dr. Flack's exercises before entering upon the regulation course of physical training gave better ultimate results than those who did not enjoy this initial advantage; but it is at least questionable whether this second lot would not have done as well as the others if they had first been put through a carefully graduated course of muscular exercises having no special reference to the respiratory movements. Provided such exercises are suitably graded, the breathing and circulation tend to fall automatically into line. A question of interest in this connexion is the character of the breathing when the normal respiratory function of the lungs is interfered with—e.g., by disease of the heart or lungs. In my experience the breathing in such cases is instinctively modified in the way best suited to meet the difficulty. Curiously enough, the text-books have little or nothing to say on this point.—I am, Sir, yours faithfully,

Wimpole-street, W., Oct. 8th, 1921. HARRY CAMPBELL.

SULFARSENOL IN THE TREATMENT OF CONGENITAL SYPHILIS.

To the Editor of THE LANCET.

SIR,—The article by Dr. E. Crawford and Dr. G. B. Fleming in THE LANCET of Oct. 1st ends with the following statement, which appears to convey an erroneous impression :—

"On the other hand, the work of Harrison, White, and Mills seems to show that intramuscular injection of neosalvarsan or its substitutes is more efficacious in producing a negative W.R. than intravenous injection of these drugs. In these cases, however, a very much larger dose was given intramuscularly than intravenously, and they did not attempt to determine the relative efficacy of the various arsenical preparations they used."

Reference to the paper by White, Mills, and myself will show that it is incorrect to say that a very much larger dose was given intramuscularly than intravenously. The drug given intravenously was "606" and the average amount was 2·8 g. That given intramuscularly or deep subcutaneously was "914" and the average amount was 3·97 g., which is equivalent to 2·64 g. "606." This investigation was based on the assumption, generally acknowledged now to be true, that, in equivalent doses, intravenous injections of "606" give better therapeutic results than injections of "914" by the same route. The results showed that the subcutaneous method gave 12 per cent. more negative reactions in primary and secondary cases respectively and led me to believe that the subcutaneous method gives better therapeutic results than the intravenous.

I find some difficulty in accepting Drs. Crawford and Fleming's conclusions as to the comparative value of sulfarsenol subcutaneously and "kharsivan" intravenously, as the number of their cases (23 under one year and 12 over) is too small to justify any serological comparison, particularly in groups of cases the members of which vary so much as do infants ranging in age from a day to twelve months. Another variant is in respect of the amount of treatment administered. I am the less inclined to accept the authors' conclusions, as my own experience of sulfarsenol in adults so far leads me to believe that, given *subcutaneously* it affords better therapeutic results than "914" given *intravenously*. But I have not yet sufficient figures to prove this point conclusively and prefer to suspend final judgment until figures are published which are free from objection. Meantime it may be justifiable to say that I have so far been very pleased with my results, both clinical and serological, which appear to bear out the good opinion formed of sulfarsenol by such French authorities as Emery and Lévy-Bing.

I am, Sir, yours faithfully,

L. W. HARRISON.

Eccleston-square, S.W., Oct. 9th, 1921.

THE DANGERS OF THE PUBLIC SWIMMING BATH.

To the Editor of THE LANCET.

SIR,—Aural surgeons for a long time have recognised the "bathing ear," and that the infection passes up the Eustachian tube to the middle ear from the nasopharynx in the great majority of cases. The septic water gets into the nose and nasopharynx owing to mismanagement of the breathing, or to stress caused by remaining under water for too long a period, especially at a depth. It may also enter the nasal accessory sinuses. I was once bathing with a friend at Madeira when he remained under water for a long time and at a good depth in order to pick up a pebble from the bottom. When he reached the surface he was rather exhausted, and complained of great heaviness of his face and head; on putting the head down water poured from both sides of his nose, obviously from the antra, with immediate relief and fortunately without septic infection. Middle-ear infection occasionally follows rupture of the membrane, if the ear "lands" flat on the water when entering from a height; only a few weeks ago a young man ruptured his left membrane, in the inferior segment, in this way when using the water chute in one of the best and most exclusive swimming baths; the middle ear became septic, and he died of meningitis. I may mention that he himself had a soft sore on his penis at the time!—I am, Sir, yours faithfully,

Savile-row, W., Oct. 7th, 1921. ARTHUR H. CHEATLE.

POST-WAR PROBLEMS.

To the Editor of THE LANCET.

SIR,—Two questions: first, are participators in "inter-allied" medical congresses going to boycott also German methods of treatment—e.g., the Erlangen X ray treatment of cancer now introduced at the West London Hospital? Secondly, when will British medical men treat the responsibility for the late war as a subject worth serious study, instead of taking their opinions thereon from interested politicians, and half-educated but wholly unscrupulous newspaper proprietors? I am, Sir, yours faithfully,

Barnsley, Oct. 7th, 1921. W. C. RIVERS.

PATHOLOGY OF INSANITY.

To the Editor of THE LANCET.

SIR,—A few days ago the Bishop of Kensington presided at a conference of a Spiritual Healing Fellowship at Church House, Westminster. For an account of the proceedings I am indebted to the London daily papers. I quote from one of them :—

"Dr. Montagu Lomax, whose book describing his experiences as physician in a lunatic asylum has recently created so much stir, spoke about the wide scope available for spiritual healing. Psycho-analysis he sweeps aside. Of merely material medical treatments he knows the futility. In spiritual forces against mental weakness he has profound belief. And then Dr. Lomax expressed a rather startling belief in demoniacal possession and reincarnation. 'While I believe that the ills men suffer are the consequences of their own misdeeds,' he said, 'I do not necessarily mean in their present existing life, but in a previous incarnation.' The Bishop's fine head became a little more covered by his hand, and his manner a little anxious at this pronouncement by Dr. Lomax!"

A quotation from a second London daily paper is as follows :—

"A paper on Spiritual Healing in Relation to Mental Disease was read by Dr. Montagu Lomax, who said he believed that insanity was sometimes much more than uncontrolled riot of the subconscious mind. He believed that in many cases, especially those of epilepsy, acute mania and melancholia, the subconscious mind of the moment was not uncontrolled, but that it was controlled by an evil and obsessing discarnate entity."

Has Dr. Lomax been correctly reported?

I am, Sir, yours faithfully,

Oct. 5th, 1921. M. H.

THE DISAPPEARANCE OF OSCAR GRAY.

To the Editor of THE LANCET.

SIR,—At the time of writing nothing has been heard as to the fate of Oscar Gray, a Rugby boy, 17 years of age, who was last seen by anyone who knew him at Liverpool-street Station a few days before he was due to return to school. As it may not unreasonably be suggested in such a case that a schoolboy may leave his home prompted by a love of adventure or through some other motive, and as Gray's parents are suffering acute distress and anxiety, the following facts may be stated pointing to loss of memory or mental derangement brought on by the concussion of a fall as being the responsible cause of his absence. In view of these the case may usefully attract the attention of medical men attached to Poor-law institutions and police surgeons.

On the morning of the boy's disappearance he was to travel up to London from his home in Essex with a friend of his parents, who had been on a visit to the family. From Liverpool-street Station he was to go to Victoria, leave his luggage in the cloak-room

there, and later to meet a school friend with whom he was to stay in Kent until his return to school. On the morning of departure Miss C., the friend of his parents, heard a crash outside her bedroom door, and found Oscar Gray lying at the foot of a steep staircase leading from his bedroom. He was not insensible, but appeared to her to be dazed, and later at breakfast, when he declared himself none the worse, he described his sensations by saying that he felt as if he had been "winded through the back." He was allowed to travel, and he seemed normal on the journey. At Liverpool-street Station he stooped down and drew Miss C.'s suit case from under the seat, placed it on the platform, and said good-bye to her. They had arranged to find their luggage independently. She looked round to obtain a porter, and did not notice then that he must have gone in the opposite direction from the van where his luggage was. His luggage was not claimed, and from that moment he has passed out of sight.

It may be pointed out that in a case of intentional absence a boy with not more than £2 or £3 in his pocket would not be likely to abandon his luggage, his only asset, or to leave it in the van where it might have called immediate attention to his conduct. Everything points to Gray having been a normal schoolboy, fond of his family, and giving no indication of any intention to do anything that must inevitably distress parents to whom he was especially attached. A reward for his discovery is now offered, the delay in doing this being no doubt due to the reluctance of the police to encourage those who might be tempted to extract profit for themselves from the kidnapping of helpless persons.

Gray is described as a dark-haired youth, about 5 ft. 11 in. in height, his most conspicuous mark being a scar in the neighbourhood of his hair, running downwards from near the right eyebrow.

I am, Sir, yours faithfully,

Oct. 10th, 1921. E. A. ARMSTRONG.

REMUNERATION OF INSURANCE PRACTITIONERS.

As the sequel to correspondence between the Medical Secretary of the British Medical Association and the Ministry of Health, with regard to the proposed reduction in the capitation fee to insurance practitioners, a deputation from the Insurance Acts Committee of the Association was received by Sir Alfred Mond on Tuesday afternoon. This date was fixed in order that the result of the interview with the Minister of Health should be included in the agenda of the Panel Conference to be held in the Wesleyan Central Hall, Westminster, on Thursday next, Oct. 20th.

The deputation received from the Minister of Health the information that he considered a reduction of the capitation fee to 9*s.* 6*d.* to be necessary. The dangers of such a policy were placed before him, it being pointed out that if panel practice, owing to inadequate remuneration, should fall into disfavour with the medical profession, the serivces rendered might no longer be of the proper character and the general object of the Insurance Acts would thus be defeated. Sir Alfred Mond, however, signified no change of mind, but appealed to the patriotism of the medical profession to come to the national assistance.

A SANATORIUM FOR MORAY.—At a meeting of the Public Health Committee of the Moray County Council, held on Oct. 5th, the question was raised as to adapting the Combination Poorhouse, Bishopmill, for a sanatorium for the county (the inmates to be otherwise provided for), and a report was submitted by the clerk. The report stated that the building was in two sections, and at present there were 38 inmates, and that it might be made available for 40 patients. The institution lacks many requirements of an ideal sanatorium, and after some discussion it was agreed to take no steps for the present.

Medical News.

EXAMINING BOARD IN ENGLAND BY THE ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At the Second Professional Examination in Anatomy and Physiology held on Sept. 29th and 30th, and Oct. 3rd, 4th, and 5th, 166 candidates presented themselves, of whom 92 were approved and 74 were rejected. The following are the names and schools of the successful candidates:—

S. Abadir, King's Coll.; C. F. Ashby and F. Asker, St. Bart.'s; E. A. Aslett, St. Mary's; A. Basilios, Birmingham; K. C. Beatty and J. Bee, London; Susanna M. Bornman, Cape Town and London Sch. Med.; H. B. Boucher, St. Thomas's; S. Brest, St. Bart.'s; S. G. Brown, London; C. J. N. Cameron, Univ. Coll.; R. E. D. Cargill, St. Bart.'s; K. R. Chaudhri, Punjab and St. Mary's; Marian B. Coleman, London Sch. Med.; P. S. Court, Guy's; B. Crosthwaite, Durham; S. W. Cuff, St. Bart.'s; S. H. Currie, London; A. J. M. Davies, St. Mary's; G. I. Davies, Univ. Coll.; A. M. Deane, St. Thomas's; G. W. R. W. Dreiheller, Middlesex; C. L. Elgood, St. Bart.'s; V. H. Ellis and P. F. Evans, London; W. O. H. Evans, Bristol; N. B. Farman, King's Coll.; L. Freeman, St. Thomas's; H. J. J. Garrod and A. Gelberg, Middlesex; R. A. Grant, Guy's; A. Harbour, King's Coll.; C. G. Harper, Middlesex; J. B. Hayes, King's Coll.; F. Heckford and W. A. Hervey, St. Bart.'s; E. W. Hicks, St. Thomas's; A. Hooper, Leeds; Barbara M. Hope, Cambridge; D. V. Hubble, St. Bart.'s; J. Hughes, Bristol; O. R. Humphreys, Cardiff; J. S. Jacobsz, Guy's; D. T. Jenkins, Edinburgh; Millicent Jervis, King's Coll.; R. A. V. Jones, London; J. Joseph, Middlesex; A. Jowell, Guy's; Abraham Jowell, Cape Town and Guy's; Marjorie A. M. Lambert, London Sch. Med.; J. J. Laws and H. E. Lewis, Guy's; W. R. A. Line, Birmingham; M. F. B. Lynch, London; G. A. McKaig, St. Thomas's; R. S. MacLatchy, London; E. L. Martin, King's Coll.; L. M. Maybury, Cambridge; E. B. Messinier, Middlesex; G. O. Morgan, Cardiff; C. T. Norris, London; K. E. Nosseir, Sheffield; R. J. Oliver, London; Dorothy Parsons, London Sch. Med.; G. M. Pennant, Cardiff; S. C. Prior, Birmingham; C. B. Rich, King's Coll.; E. J. H. Roth, St. Bart.'s; B. Rubinstein and M. Rubinstein, Guy's; E. J. Ryan-MacMahon, St. Thomas's; J. Shutt, Leeds; V. Sinnetamby, Ceylon and Middlesex; C. R. Steel, St. Bart.'s; E. G. Steeler, King's Coll.; K. H. Tan, Middlesex; Ada Taylor, Univ. Coll.; M. Taylor, Guy's; E. J. Thomas, Cardiff; R. D. M. Tims, Cambridge and St. Thomas's; R. W. H. Tincker, St. Bart.'s; P. W. Tobin, St. Mary's; V. C. Tughan, Univ. Coll.; D. C. Vaughan, Manchester; Kathleen M. Ward, Liverpool; H. C. Warner, Guy's; T. M. Wilks, King's Coll.; J. H. Williams, London; T. J. Wilson, St. Bart.'s; J. Wolstencroft, Liverpool; and G. C. Young, King's Coll.

Materia Medica and Pharmacology.—S. Abadir, King's Coll.; G. N. Beeston, Charing Cross; J. L. Brown, King's Coll.; H. B. Boucher and A. J. S. L. Boyd, St. Thomas's; G. H. Buncombe, St. Bart.'s; A. R. Cox, Guy's; A. Davies, Cardiff; G. W. R. W. Dreiheller, Middlesex; F. W. Dunn, Charing Cross; R. A. Dyke, Guy's; W. Egan, King's Coll.; G. I. Evans, Manchester; T. P. Evans, Charing Cross; R. G. Flower, Leeds; C. S. Forrest, Manchester; A. R. Fox, Middlesex; T. F. Fox, Guy's; J. F. Hamber and A. Harbour, King's Coll.; Katie E. Hudson, London Sch. Med.; N. H. Ibrahim, Sheffield; C. W. Jones, Cardiff; R. D. Jones, Edinburgh and Middlesex; G. B. Kirkland, Guy's; Marjorie A. M. Lambert, London Sch. Med.; M. M. Lewin and G. A. McKaig, St. Thomas's; C. F. Morrison, Guy's; W. R. Nash, Cardiff; R. A. Newsom, King's Coll.; R. E. Overton, Univ. Coll.; Dorothy Parsons, London Sch. Med.; G. M. Pennant, Cardiff; P. J. J. Pienaar, St. Thomas's; A. Pierce, Birmingham; M. Rubinstein, Guy's; A. Sherning, St. Thomas's; J. Shutt, Leeds; R. F. Smith, Guy's; B. L. Steele, Univ. Coll.; E. G. Steeler, King's Coll.; M. Taylor, Guy's; O. F. Thomas, Manchester; V. C. Tughan, Univ. Coll.; W. R. van Langenberg, Middlesex; D. C. Vaughan, Manchester; R. L. Washington, Birmingham; M. Weisman, Manchester; F. E. C. Williams, St. Bart.'s; H. H. Williams, Liverpool and Middlesex; and T. Yoxall, Birmingham.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH, ROYAL COLLEGE OF SURGEONS OF EDINBURGH, AND ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—The following candidates having passed the requisite examinations have been admitted Diplomates in Public Health:—

Alfred F. Adamson, Isabella M. M. Aitken, William R. Clayton-Heslop, Edward M. E. Cumming, William Cunningham, Andrew Davidson, Andrew M. Davidson, Jean D. Don, David Fyfe, Janet Grant, Donald C. Lamont, Isabel Macfie, William McKendrick, Jane S. McPhail, George Morris, Taylor D. Murison, Evan W. Richards, Helena J. Robertson, Richard Sandilands, John W. Simpson, Alexander D. Stewart, and Mary C. Walker.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—At a meeting held on Oct. 3rd the following were admitted (after examination) as Fellows of Faculty:—

George Bell Brand, M.B., Ch. B.; John Williamson Dalgleish, M.B., Ch.B.; John Rennie Carrie Gordon, L.R.C.P., L.R.C.S., L.R.F.P.S.G.; Madari Audia Keshvalu, M.R.C.S.Eng., L.R.C.P.Lond.; John Wilson Leitch, M.B., Ch.B.

UNIVERSITY OF SHEFFIELD POST-GRADUATE COURSE.—A post-graduate course of lectures and demonstrations will be held in the Sheffield hospitals during the ensuing three months. Details will be found in our Medical Diary.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE.—The opening meeting of the session will be held at 11, Chandos-street, Cavendish-square, London, W., on Thursday, Oct. 20th, at 8.45 P.M. (demonstrations at 7.45 P.M.). The presidential address entitled "Life Insurance in the Tropics" will be delivered by Sir James Cantlie.

UNIVERSITY OF MANCHESTER.—The congested conditions of laboratories and class-rooms seem likely to be maintained during the present term. Last year the total number of students was 3100, of whom 754 were in the Faculty of Medicine. In 1914 there were about 300 medical students, and in all probability this Faculty will have to supply teaching to about 700 students—men and women. A considerable number of ex-Service men are taking courses in pharmacy to fit themselves as dispensers. Mr. Arthur Burgess has succeeded Sir William Thorburn in the Chair of Clinical Surgery, and the Chair of Clinical Medicine, formerly held by Prof. Reynolds, is now held by Dr. Albert Ramsbottom. Prof. Donald has resigned the Chair of Obstetrics and Gynæcology, and is succeeded by Dr. W. E. Fothergill. The Council has created a new Chair of Clinical Obstetrics and Gynæcology, to which Prof. Donald has been appointed.—Entrance scholarships in Medicine have been awarded to Mr. William Brockbank, B.A., and Mr. C. N. H. Long, B.Sc. The Sir Clement Royds Memorial Scholarship in Chemistry has been awarded to J. F. Wilkinson, B.Sc., who will undertake research work in organic chemistry.

UNIVERSITY OF OXFORD.—Mr. Edward George Tandy Liddell, M.A., B.M., of Trinity College, Oxford, has been elected to a non-official Fellowship for Research in Physiology. Mr. Liddell took a first class in physiology in 1918, and completed his medical course at St. Thomas's Hospital. Mr. Cyril Norman Hinshelwood, B.A., War Memorial Research Fellow (formerly scholar), of Balliol College, has been elected to an official Fellowship as Lecturer in Chemistry.

UNIVERSITY OF LONDON.—A course of eight public lectures on Psychology and Psychotherapy will be delivered at King's College, Strand, on Tuesdays at 5.30 P.M., beginning Oct. 18th, by Dr. William Brown. Admission free, without ticket. The list of lectures appears in our advertisement columns.—Two courses of advanced Lectures in Physiology will be delivered during the first term of this session. Dr. C. Da Fano will give eight lectures on Histology of the Nervous System at King's College, Strand, London, W.C., at 4.30 P.M., on Wednesdays. The first lecture was delivered on Oct. 12th, and the next will be given on Oct. 19th. Dr. J. C. Drummond, D.Sc., will deliver eight lectures on Nutrition at University College, Gower-street, London, W.C., at 4.30 P.M., on Fridays, beginning to-day, Oct. 14th. Attendance at these courses is recognised in connexion with the B.Sc. (Honours) Degree in Physiology. The lectures are addressed to advanced students of the University and others interested in the subject. Admission free, without ticket.

MEDICO-LEGAL SOCIETY.—A meeting of this Society will be held at 11, Chandos-street, London, W., on Tuesday, Oct. 18th, at 8.30 P.M., when a paper will be read by Mr. W. Valentine Ball, barrister-at-law, on Incapacity for Work within the Meaning of the National Insurance Act, 1911.

CHADWICK PUBLIC LECTURES.—A lecture on "Plant Diseases and their Relation to Diseases in Man," will be delivered by Prof. V. H. Blackman, F.R.S., in the lecture room, Chelsea Physic Garden, Swan Walk, Royal Hospital-road, London, S.W., on Thursday, Oct. 20th, at 5.15 P.M., Sir William J. Collins presiding. The gardens will be on view before the lecture.

LONDON HOSPITAL MEDICAL SOCIETY.—The programme for the ensuing session has now been issued. On Oct. 27th a Psycho-neurological evening will be held. On Nov. 10th Mr. T. P. Dunhill will read a paper, and on Nov. 24th Dr. J. H. Sequeira will speak. On Dec. 8th Dr. W. E. Dixon will read a paper on Physical Action of Drugs. In the second half of the session the meetings on Jan. 19th and March 2nd will be devoted to clinical subjects, and that on Feb. 16th to Gynæcology. On Feb. 2nd Dr. Henry Head will address the Society. The meetings are held on Wednesdays, and all old London Hospital students and their friends are invited to attend.

MEDICAL GOLFING SOCIETY.—A handicap singles competition on the knock-out system is shortly to be held. The entries close on Monday, Oct. 17th. Further particulars can be obtained from the Hon. Secretary, 36, Weymouth-street, London, W. (Telephone: Paddington 904.)

UNIVERSITY OF ABERDEEN.—At a university court held on Sept. 27th it was announced that Miss Catherine Fyfe Grant, of Edinburgh, had bequeathed about £2250 to found a bursary in the Medical Faculty, to be known as the Grant Medical Bursary.

OLD STUDENTS' DINNERS.—*St. Bartholomew's Hospital.*—Old students met again for dinner in the Great Hall on Oct. 3rd after an interval of nine years. Mr. W. S. A. Griffith occupied the chair and took the opportunity to give a long overdue eulogy of Matthews Duncan and his work in raising obstetrics to its proper place in London. He proposed separately for the first time the toasts of "The Hospital" and "The Medical College" in view of the receipt of a Royal Charter by the latter. Sir William Lawrence, replying for the hospital, expressed his continued belief in the ability of spontaneous generosity to finance a great hospital. Mr. H. J. Waring, replying for the College, set out the constitution of the new Medical Council and its intentions in regard to further development of teaching units. Among many guests of distinction were the presidents of the Royal Colleges, both old Bartholomew's men, the vice-chancellors of Cambridge and London Universities, the secretary of the Medical Research Council, and the dean of Columbia University, New York. During the dinner it was announced that Lord Stanmore was succeeding Lord Sandhurst as treasurer of the hospital.

Charing Cross Hospital.—The annual dinner of the past and present students was held at Gatti's Restaurant on Oct. 5th. Sir James Galloway presided over a large gathering. After the loyal toasts had been duly honoured, "The Hospital and Medical School" was proposed by Mr. Norman Lake. A successful change was made from the usual custom of this toast being responded to by the Dean or other official: this year two students, Miss H. L. J. Wallace and Mr. W. H. Williams, replied. "The Guests" was proposed by Dr. J. M. H. MacLeod, the guest of the evening being Sir Frederick Mott, consulting physician to the hospital. In reply Principal Ernest Barker made a clever and humorous speech, while Sir Frederick Mott replied both in speech and song. Dr. W. C. Bosanquet proposed the health of the chairman, which was drunk with musical honours. During the evening, owing to the kindness of Sir Oswald Stoll, musical selections were given by artistes from the Coliseum.

St. Mary's Hospital Medical School.—The annual dinner was held at the Connaught Rooms on Oct. 3rd. The chair was taken by Dr. E. G. Graham Little, physician-dermatologist to the hospital, and 150 past and present students were present. In replying to the toast of "St. Mary's Hospital and the Medical School," Mr. A. R. Prideaux, the chairman of the board of management, alluded to the severe financial strain which was being felt by all the voluntary hospitals, but confessed himself an optimist who looked forward with confidence to the preservation of the voluntary system. Dr. C. M. Wilson, dean of the medical school, was in the pleasant position of being able to report most favourably on the events of the past year—the outstanding feature being the decision of the Board of Education to establish clinical units in medicine and surgery at St. Mary's. This he looked upon as a recognition by the educational authorities that St. Mary's was worthy of their support and assistance. The entry of new students had been well maintained, and the total number now studying at the school was larger than ever before. Among other interesting facts he pointed out that one-fourth of the total number of candidates for the Primary Fellowship examination from all the British schools were trained at St. Mary's. The chairman, in proposing the health of Sir William Willcox, on whom the honour of K.C.I.E. has been conferred during the past year, had as pleasant a task as could fall to the lot of any man, and on rising to reply Sir William Willcox received a remarkable ovation.

Middlesex Hospital Medical School.—Over 220 past and present students of the Middlesex Hospital assembled at the Trocadero Restaurant on Oct. 4th. Amongst those present were the Earl of Athlone, Sir John Bland-Sutton, Surgeon-Rear-Admiral Sir Percy Bassett-Smith, and Sir Edward Penton. Mr. Comyns Berkeley occupied the chair, and in proposing the toast of the Hospital and Medical School, gave an interesting account of their history since their foundation in two small houses in Windmill-street 146 years ago. The president also referred to the satisfactory condition of the medical school, in which over 600 students were working during the past year. Amongst the most important events of the year were mentioned the endowment of the Chair in Physiology, and the successful working of a scheme whereby the patients contributed

towards their maintenance according to their means. In conclusion the president welcomed Sir John Bland-Sutton, whom he described as the John Hunter of the present day. The Earl of Athlone, in reply, signified his gratification that the hospital had been enabled to carry on its work under the voluntary system. The Dean, Mr. A. E. Webb-Johnson, emphasised the need for the endowment of further professorial chairs in the medical school. Sir John Bland-Sutton, in rising to reply to the toast of the Guests, was received with an ovation which indicated the affection and esteem in which he is held by all generations of Middlesex men. The evening closed with the proposal of the health of the President by Dr. Campbell Thomson, and this toast was very warmly received.

St. Thomas's Hospital Old Students' Dinner.—This dinner will be held on Friday, Oct. 28th, at 7 for 7.30 P.M., at the Wharncliffe Rooms, Hotel Great Central, London, N.W., Dr. H. W. G. Mackenzie in the chair.

PRINCE OF WALES'S GENERAL HOSPITAL REUNION. The inaugural dinner will be held at the Trocadéro Restaurant, Piccadilly-circus, on Thursday, Oct. 27th, at 7.30 for 8 P.M. Past residents and students of the hospital who have not received a notice can obtain further particulars from Mr. H. W. Carson, 111, Harley-street, London, W. 1.

POST-GRADUATE LECTURES ON PEDIATRICS.—Under the auspices of the Fellowship of Medicine and Post-Graduate Medical Association a course of 12 practical lectures on Gastro-intestinal Affections in Children will be given at "The Children's Clinic," Western General Dispensary, Marylebone-road, London, N.W. 1, on Mondays and Thursdays at 4.45 P.M. The first lecture will be given on Oct. 17th by Prof. W. Bayliss on the Physiology of Digestion. Subsequent lectures will be given by Dr. Bernard Myers, Dr. T. Joekes, Dr. H. E. Archer, Dr. G. Low, Dr. J. G. Thomson, Mr. Tyrrell Gray, and Dr. Martin Berry. The fee for the course to Fellowship members is 1½ guineas, and 2 guineas to non-members. A detailed syllabus and tickets can be obtained from the Secretary to the Fellowship of Medicine, 1, Wimpole-street, W. 1.

WEST KENT MEDICO-CHIRURGICAL SOCIETY.—The first meeting of the session will be held at the Miller General Hospital, Greenwich, to-day (Friday), at 8.45 P.M. The President, Dr. A. M. Cato, will preside, and cases will be shown by Dr. E. P. Cumberbatch, Dr. Montague Hine, Mr. Willmott Evans, and Mr. C. A. Joll. The next meeting will be held on Nov. 11th, when Mr. P. B. Roth will read a paper on Treatment of Fractures. On Dec. 9th the Purvis Oration will be delivered by Sir James Purves Stewart on Respiratory Disorders of Nervous Origin. Jan. 13th will be devoted to a Clinical Evening. On Feb. 10th Dr. C. O. Hawthorne will read a paper on Some Pulse Tracings and their Meanings. On March 10th Mr. C. J. S. Thompson, Curator of the Wellcome Historical Museums, will speak on Parturition Chairs, their History and Use; and on April 14th Mr. Ernest B. Dowsett will discuss Pyorrhœa Alveolaris. On May 12th the presidential address will be delivered. The annual subscription to the Society is 10*s.* 6*d.*, and the Hon. Secretary is Dr. C. J. B. Buchan, 326, Brownhill-road, Catford, London, S.E.

ROYAL FREE HOSPITAL MEDICAL SOCIETY.—A meeting was held on Oct. 6th, Dr. G. Scott Williamson in the chair. The meeting took the form of a debate in which Lady Barrett proposed the motion that Vaccination is a Prophylactic against Small-pox. She said that it had been established as a result of observation that those who had had cow-pox were not liable to small-pox; inoculation experiments had been done to prove this. The effect of extensive child vaccination in this country had been to change the age-incidence of small-pox from childhood to the adult life when effects of vaccination had passed off. Small-pox undoubtedly occurred in a modified form in those who had previously been vaccinated, whereas revaccination of adults had been successful in preventing small-pox. Lady Barrett quoted statistics in support of her statements. Dr. W. R. Hadwen, in opposing, said that it was a dairymaid's superstition that vaccination protected against small-pox. The change of age-incidence was not conclusive, since in the seventeenth century small-pox had been a disease of adults; also, influenza showed a similar periodic age-incidence. The mortality of small-pox had not been altered since the introduction of vaccination. He thought that the diminishing incidence and modified type of small-pox were purely due to improved sanitation with its beneficial effects on child life. The death-rate from small-pox in the unvaccinated children had fallen in the same proportion as in the vaccinated, and the effects of revaccination did not show any protective action. The President contended that science had neither proved nor disproved the value of vaccination as a prophylactic.

SOCIETY OF MEDICAL OFFICERS OF HEALTH: ANNUAL DINNER.—The annual dinner will be held at the Café Royal, Regent-street, London, W., on Friday, Oct. 21st. A few tickets are still obtainable (price 15*s.*) from the Executive Secretary, 1, Upper Montague-street, Russell-square, London, W.C. 1.

LONDON DERMATOLOGICAL SOCIETY.—A meeting will be held at 4.30 P.M. on Tuesday, Oct. 18th, at St. John's Hospital, 49, Leicester-square, London, W.C., when clinical cases will be shown. At 5 P.M. the opening address will be delivered by Sir W. Arbuthnot Lane on the Changes of the Skin in Chronic Intestinal Stasis.

ROYAL COLLEGE OF SURGEONS IN IRELAND.—At the last meeting of the Council of the College, Mr. G. J. Johnston was re-elected Professor of Surgery in the school of the College; Dr. R. J. Rowlette was elected Professor of Pharmacology; and Dr. J. W. Bigger was elected Professor of Preventive Medicine and Medical Jurisprudence. The two latter appointments were made on the nomination of the President and Fellows of the Royal College of Physicians of Ireland.

SOCIÉTÉ DE PSYCHOTHÉRAPIE: ANNUAL MEETING. The twenty-fourth annual meeting of this society will be held on Tuesday, Oct. 18th, at 4 P.M., and on Wednesday, the 19th, at 10 A.M., at 49, rue Saint-André-des-Arts, Paris. The annual banquet will take place on the 18th. The programme of the meeting will include an account of Mr. J. Voisin's works on psychotherapy, and discussions on psychotherapy, its progress and its actual orientation, and on the influence of race in nervous and mental diseases. Individual communications will be welcomed. Foreign physicians specialising in psychotherapy are invited to take part in the discussions and to make communications at this séance of the society, of which Mr. J. Voisin is president. Those desiring to be present are invited to write to the secretary, Monsieur Bérillon, 4, rue de Castellane, Paris, VIIIe.

LEICESTER ROYAL INFIRMARY.—A great effort is being made to raise the sum of £100,000 in recognition of the 150th anniversary of this infirmary. It is proposed to try to obtain the money by the "Unit" system, the sum of 12*s.* 6*d.* represents a "unit," being made up of 150 pennies—a penny for every year that the Infirmary has been opened. The city is being asked to raise 112,000 units and the county 48,000 units, these totals being based on the numbers of patients received in 1920 from the city and county. A table has been arranged showing the amount of units required from citizens of Leicester rated at various sums, and the country parishes will be asked to subscribe at the rate of approximately one unit for every four residents. A number of business houses and private residents have already indicated their willingness to adopt the system. Contributions should be sent to the house governor and secretary at the Leicester Royal Infirmary.

ROYAL MICROSCOPICAL SOCIETY.—The annual conversazione of this society was held at the Mortimer Halls on Wednesday, Oct. 5th. The President, Prof. John Eyre, M.D., received the guests in the Upper Hall, in which the members of the society had arranged a large and interesting collection of pond-life exhibits. Among the most appreciated were beautiful preparations of diatoms, sun animalcule, water-fleas stained while alive with neutral red, and plumatella shown against brilliant coloured backgrounds obtained by means of Rheinberg's discs. In the Lower Hall most of the important microscope firms had stands exhibiting modern instruments of all kinds. During the evening Dr. J. A. Murray gave lantern demonstrations on the cellular structure of the body in an adjoining room, which was all too small to accommodate those who wished to see the slides.

BIRMINGHAM WOMEN'S HOSPITAL.—This hospital celebrated its jubilee on Oct. 3rd. In 1871 the hospital began its existence in a building in the Crescent; seven years later an out-patient department was opened in the Upper Priory and in the same year the in-patient department was transferred to Sparkhill. In 1904 an entirely new and admirably designed hospital was built. In 1911 the hospital took over the management of the Maternity Hospital, which was founded in 1842. To-day there are 175 beds under the care of the committee. During the 50 years 35,000 in-patients have been treated. Last year there were 2760 in-patients, 20,000 attendances as out-patients, 600 cases in convalescent homes, and 85 pupils were trained for the C.M.B. certificate: 1500 district maternity cases were visited. The hospital was the first women's hospital to have a medical woman on the staff and to have an equal number of men and women on the committee. To-day there are nine medical women associated with the two hospitals.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Tuesday, Oct. 18th.

GENERAL MEETING OF FELLOWS: at 5 P.M.
Ballot for Election to the Fellowship. (Names already circulated.)

MEETINGS OF SECTIONS.

Tuesday, Oct. 18th.

SECTION OF PATHOLOGY: at 8.30 P.M.
Dr. J. C. Mottram: Observations upon the Action of Radium and X rays upon the Mononuclear Leucocytes of the Blood.
Dr. W. Cramer and Dr. J. C. Mottram: Changes in Lymphoid Tissue after Exposure to X rays, and in Vitamin-Starved Animals.
Dr. J. A. Murray: Dissemination along Nerve-trunks in Tar-cancer.
Prof. S. G. Shattock: Dissemination along Nerve in Carcinoma of the Tongue.
Dr. A. Leitch: Casts of Tar-tumours in Rabbits.
Dr. C. C. Okell: The Sachs-Georgi Reaction in Syphilis (Dreyer's Technique and Bordet's Antigen).

Wednesday, Oct. 19th.

SECTION OF HISTORY OF MEDICINE: at 5 P.M.
Dr. Charles Singer (President): A Few Remarks on the Historical Work of the Past Year.
Dr. F. G. Chandler: The History of the Diagnosis and Treatment of Empyema Thoracis.

Thursday, Oct. 20th.

SECTION OF DERMATOLOGY: at 5 P.M. (Cases at 4.30 P.M.)
Cases:
Dr. H. C. Semon: (1) Psoriasis, treated by Danysz's Method (2 cases); (2) Tuberculosis Cutis.
Dr. George Pernet: (1) Band Sclerodermia of Leg in a Woman, showing Result of Treatment; (2) Epithelioma on Lupus Vulgaris in a Woman.
Other Cases will be shown.

Friday, Oct. 21st.

SECTION OF OTOLOGY: at 5 P.M. (Cases at 4.45 P.M.)
Presidential Address:
Dr. Logan Turner: The Structural Type of the Mastoid Process, Based upon the Skiagraphic Examination of 1000 Crania of Various Races of Mankind. (With epidiascope.)
Communication:
Dr. P. Watson-Williams and Mr. E. Watson-Williams: A Method of Diagnostic Exploration of the Posterior Ethmoidal Cells. (With lantern slides.)
Cases will be shown by:
Mr. Sidney Scott: A Pigeon 16 Months after a Single Application of Alcohol to the Membranous Labyrinth.
Mr. Lawson Whale: Large Exostosis Removed from Ear of Adult Male.
Mr. T. H. Just: (1) Case of Ossification of the Membrane around a Perforation; (2) Tumour of External Auditory Meatus.
Other Cases will be shown.

SECTION OF ELECTRO-THERAPEUTICS: at 8.30 P.M.
Presidential Address:
Dr. E. P. Cumberbatch: Progress in Electrology and Radiology; the Importance of Physics, Physiology, and Anatomy.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.
MONDAY, Oct. 17th.—12.15 P.M., Dr. Burnford: Pathological Demonstration. 2 P.M., Dr. S. Pinchin: Medical Out-patients. Dr. Simson: Diseases of Women. 2.30 P.M., Dr. A. Saunders: Demonstration of Cases (Medical Wards). Mr. Addison: Visit to Surgical Wards. 5 P.M., Lecture:—Dr. A. Saunders: Digestive Troubles of Childhood.
TUESDAY.—11 A.M., Dr. McDougal: Electrical Department. 12 noon, Mr. Sinclair: Surgical Diseases of the Abdomen. 2 P.M., Dr. Morton: X Ray Department. 2.30 P.M., Mr. T. Gray: Visit to Surgical Wards. 5 P.M., Lecture:—Dr. Pernet: Some Secondary Syphilides.
WEDNESDAY.—10 A.M., Mr. MacDonald: Genito-Urinary Department. 12 noon, Mr. Simmonds: Demonstration of Fractures. 2 P.M., Mr. D. Armour: Demonstration of Cases (Surgical Wards). Dr. Owen: Medical Out-patients. Mr. Gibb: Eye Department. 5 P.M., Lecture II.:—Mr. T. Gray: Surgery of the Mesentery.
THURSDAY.—12 noon, Dr. Pinchin: Diseases of the Heart. 2 P.M., Mr. MacDonald: Surgical Out-patients. Mr. Armour: Operations. 5 P.M., Lecture:—Dr. Snowden: The Psycho-Neuroses.
FRIDAY.—10 A.M., Mr. D. Buxton: Dental Department. 2 P.M., Dr. Burrell: Medical Out-patients. Mr. Sinclair: Surgical Out-patients. Dr. Pernet: Skin Department. 2.15 P.M., Mr. Addison: Operations. 5 P.M., Lecture:—Dr. Pritchard: Pleural Effusions.
SATURDAY.—10 A.M., Dr. Burnford: Demonstration of Cases (Medical Wards). Dr. A. Saunders: Medical Diseases of Children. 2 P.M., Mr. Simmonds: Surgical Out-patients.
Daily:—10 A.M., Visit of Post-graduates to Wards. 2 P.M., In-patient, Out-patient Clinics and Operations.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART POST-GRADUATE COURSE, Westmoreland-street, Marylebone, W.
MONDAY, Oct. 17th.—11 A.M., Dr. Goodall: Out-patients. 2 P.M., In-patients. 5.30 P.M., Lecture:—Sir S. Russell-Wells: Mitral Disease.
TUESDAY.—10 A.M., Dr. Parsons-Smith: Out-patients. 11 A.M., Dr. Price: In-patients. 2 P.M., Sir S. Russell-Wells: Out-patients.
WEDNESDAY.—10 A.M., Dr. Parkinson: Out-patients. 2 P.M., Dr. Moon: In-patients.
THURSDAY.—2 P.M., Dr. Price: Out-patients. Dr. Moon: In-patients. 6.30 P.M., Dr. Hamill: Out-patients.
FRIDAY.—10 A.M., Dr. Parsons-Smith: Out-patients. 2 P.M., Dr. Parkinson: Out-patients. 3 P.M., Dr. Parkinson: In-patients. 4 P.M., Dr. Hamill: In-patients.
SATURDAY.—10.30 A.M., Dr. Hamill: In-patients.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.
THURSDAY, Oct. 20th.—4 P.M., Lecture:—Mr. T. T. Higgins: Fractures.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.
THURSDAY, Oct. 20th.—Chesterfield Lecture:—Dr. W. Griffith: The Diagnosis of Skin Diseases.

ST. MARYLEBONE GENERAL DISPENSARY, 77, Welbeck-street, Cavendish-square, W.
Post-Graduate Course on Infant and Child Welfare.
A Course of Twelve Lectures on the Management and Feeding of Infants and Young Children, by Dr. E. Pritchard to Qualified Practitioners.
WEDNESDAY, Oct. 19th.—6 P.M., Lecture V.:—The Modification of Milk.
FRIDAY.—6 P.M., Lecture VI.:—The Uses of Dried Milk and Patent Foods.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE CLINIC.
TUESDAY, Oct. 18th.—4.30 P.M., Dr. J. G. Clegg: Inflammations of the Cornea.

MANCHESTER FRENCH HOSPITAL POST-GRADUATE LECTURES, 24, Acomb-street, Whitworth Park.
THURSDAY, Oct. 20th.—4.15 P.M., Dr. N. C. Haring: Chest Troubles.

SALFORD ROYAL HOSPITAL.
THURSDAY, Oct. 20th.—4.30 P.M., Mr. Garnett Wright: Diagnosis and Treatment of Tumours of Breast.

UNIVERSITY OF SHEFFIELD.—FACULTY OF MEDICINE.
Post-Graduate Lectures and Demonstrations.
TUESDAY, Oct. 18th. (At the Royal Infirmary.)—3.30 P.M., Mr. G. H. Pooley: Common Diseases of the Eye. 4.15 P.M., Mr. E. F. Finch: Intestinal Obstruction.
FRIDAY. (At the Royal Hospital.)—3.30 P.M., Dr. A. E. Naish: Demonstration of Cardiac Cases. 4.15 P.M., Dr. P. J. Hay: Cases of Inflammation of the Cornea.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.
A Course of Eight Lectures and Discussions on Problems of Public Health in Relation to Industrial Hygiene at the Lecture Theatre of the Institute.
WEDNESDAY, Oct. 19th.—4 P.M., Lecture I.:—Sir Thomas Oliver: Problems of Industrial Hygiene in Relation to Public Health.

Appointments

KEEP, A. C., M.D., C.M. Edin., has been appointed Honorary Consulting Surgeon to the Samaritan Free Hospital for Women, Marylebone.
WARD, B. J., F.R.C.S. Eng., Honorary Surgeon, Queen's Hospital, Birmingham.

Vacancies.

For further information refer to the advertisement columns.

Aberdeen University.—Lect. in Bio-Chemistry. £550.
Aberdeen University and North of Scotland College of Agriculture.—Physiologist. £600.
Albert Dock Hospital, Connaught-road, E.—Surg.
Barrow-in-Furness, North Lonsdale Hospital.—H.S. £225.
Bath, Royal Mineral Water Hospital.—Physician.
Bedford County Hospital.—Asst. H.S. £150.
Birmingham, Dudley-road Hospital.—Sen. Res. Asst. M.O. £450.
Bristol General Hospital.—Hon. Ophth. Surg. H.S. Cas. H.S. Each £175.
Cairo, Egyptian Government School of Medicine.—Prof. of Pathology. L.E.1200–1440.
Cambridge, Addenbrooke's Hospital.—H.S. £130.
Cancer Hospital, Fulham-road, S.W.—First Asst. to Research Dept. £750.
Capetown, Somerset Hospital.—Res. H.P. £30 per month.
Cardiff, King Edward VII. Hospital and Medical School.—Anæsth. £50.

Croydon Public Health Department.—Asst. Res. M.O. at Borough Hosp. for Infectious Diseases. £350. Res. Med. Supt. at Borough Hosp. for Infectious Diseases and Asst. M.O.H. £500.
East London Hospital for Children and Dispensary for Women, Shadwell, E.—Res. M.O. £200. H.S. H.P Each £125.
Glasgow, Hawkhead Asylum, Cardonald.—Asst. M.O. and Pathologist. £275.
Gloucester County and City Tuberculosis Institution, Standish, near Stonehouse.—Med. Supt. £500.
Gloucester, Gloucestershire Royal Infirmary and Eye Institution.—Asst. H.S. £150.
Hospital for Sick Children, Great Ormond-street, W.C.—H.S.'s £50.
Huddersfield Royal Infirmary.—Jun. H.S. £200.
Isle of Wight County Mental Hospital, Whitecroft.—Asst. M.O. £300.
Leeds Public Dispensary.—Sen. Res. M.O. £250.
Leicester Isolation Hospital and Sanatorium.—Second Asst. Res. M.O. £350.
Lincoln County Hospital.—Sen. H.S. £250.
Liverpool.—Part-time Medical Officer. £800.
London Fever Hospital, Islington, N.—Hon. Asst. Phys. Hon. Aural Surg.
Manchester Royal Infirmary.—Accident Room H.S. £200.
Metropolitan Asylums Board.—Jun. Asst. M.O. at Queen Mary's Hospital for Children, Carshalton, Surrey. £515 6*s.*
National Hospital for Diseases of the Heart, Westmoreland-street, W.—Res. M.O. £150. Out-patient M.O. £150.
Newcastle-upon-Tyne, Hospital for Sick Children.—Jun. Res. M.O. £200.
Plymouth, South Devon and East Cornwall Hospital.—H.S. £200.
Royal London Ophthalmic Hospital, City-road, E.C.—Sen. H.S. £150.
Royal Naval Medical Service.—Surg. Lieuts.
Sheffield, Jessop Hospital for Women.—Asst. H.S. £100.
Sheffield Royal Infirmary.—H.S. H.S. for Ear, Nose and Throat. Asst. Cas. O. Each £150.
South Africa, Union of, Mental Hospital Service.—Asst. Physicians. £400.

THE Chief Inspector of Factories announces the following vacant appointments: Finedon (Northampton), Purfleet (Essex).

Births, Marriages, and Deaths.

BIRTHS.

CUTLER.—On Oct. 1st, at Kensington House, Dudley-road, Hastings, the wife of F. J. Cutler, M.R.C.S., L.R.C.P., of a daughter.
PARKINSON.—On Oct. 2nd, at 1, Devonshire-place, W. 1, the wife of John Parkinson, M.D., M.R.C.P., of a daughter.
THATCHER.—On Oct. 4th, at Walker-street, Edinburgh, the wife of Surgeon Lieut.-Commander Malcolm Thatcher, R.N., of a daughter.

MARRIAGES.

CLAPHAM—PAYNE.—On Oct. 4th, at St. Mark's Church, Peterborough, Harold Clapham, M.R.C.S., L.R.C.P., Park-road, Peterborough, to Gladys Mary, younger daughter of the late George Speke Payne, M.R.C.S., L.S.A., of Peterborough.

DEATHS.

MILLER.—On Oct. 2nd, James Duff Miller, M.B., C.M. Edin., L.S.A.
PENFOLD.—On Sept. 30th, at Mardale House, Rainham, Kent, Frederick William Henry Penfold, M.R.C.S. (Eng.), L.R.C.P. (Edin.), in his 62nd year.
RAINE.—On Oct. 3rd, at Orwell House, Darlington, George Rolph Raine, M.D.
STONE.—On Saturday, Oct. 1st, at 3E, Maida Vale Mansions, W. 9, William Domett Stone, M.D., F.R.C.S., &c., younger son of the late Thomas Madden and Honor Stone, aged 81 years.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

GREAT NORTHERN CENTRAL HOSPITAL.—Lord Islington will preside at a meeting at the Mansion House in aid of the Great Northern Hospital, on St. Luke's Eve, Monday next, at 3 P.M.

AN address will be delivered to the members of the London Chamber of Commerce on the Petroleum Problem as Affecting British Industry, by Mr. A. Beeby Thompson, M.I.Mech.E., in the Council Room of the Chamber, on Monday next, Oct. 17th, at 2.30 P.M.

DONATIONS AND BEQUESTS.—By the will of the late Mr. John Charles Pipe, of Ipswich, the testator gives £1000 each to the East Suffolk and Ipswich Hospital; St. Bartholomew's Hospital, London; Dr. Barnardo's Homes; and the Home for Incurables, Streatham; and £250 to the Samaritan Society, Ipswich. The residue of the estate, after certain beneficiaries are provided for, will also accrue to these and other institutions.

Notes, Short Comments, and Answers to Correspondents.

VITAL STATISTICS:
THEIR BETTER USE IN PUBLIC HEALTH ADMINISTRATION.[1]

BY SIR ARTHUR NEWSHOLME, K.C.B., M.D. LOND.

VITAL statistics or biometrics occupy in public health teaching and administration an essentially subsidiary position, being one of several tools which the public health worker employs in his pursuit of knowledge and measurement of results. To place them on an equal footing with the fundamental sciences of biology, chemistry and physics, and of pathology, preventive medicine, and epidemiology in public health administration, or in an organised programme for the training of public health officers, appears to me to imply confusion of thought and of plans.

In their present stage of development in most communities, vital statistics form an excellent servant but a very bad master for the health officer. They have been invaluable in stimulating and in guiding past public health effort, and especially in directing attention to the areas of excessive general mortality, and of excessive mortality in infancy and from special definite causes of mortality; but medical certification, especially with regard to the more general and so-called constitutional diseases, is still defective, and conclusions based on municipal or national statistics dealing with this certification must be held in suspicion. Even under more definite headings we need to bear in mind the necessary limitations of statistical inference. Mass statistics give information which is inferior in value to the information derived from the intensive investigation of individual cases—the dynamic method of study. As James Clerk Maxwell said, "however imperfect the dynamic study of man may be in practice, it evidently is the only perfect method in principle," its shortcomings arising not from a faulty method of procedure, but from the limitations of our powers. On the other hand, results obtained by the statistical method "belong to a different department from the domain of exact science."

Inductions which Cannot be Stated Quantitatively.

Many inductions in causation and in the preventive or clinical treatment of disease cannot, with our present knowledge, be expressed otherwise than qualitatively, and yet they are as well established as if they could be stated quantitatively. This is especially true for inductions as to the results of some forms of sanitary and social effort. Two instances may be adduced.

It is often difficult to show any quantitative relation between the amount of sanitary and social effort and the reduction in the death-rate from tuberculosis. This relation evidently must be one between the total prevalence of the disease and opportunities for its communication on the one hand, and the totality of measures taken or operating for its prevention on the other hand. Were it possible to measure and weigh exactly the value and the extent of action of each factor concerned, the relation could be shown; but we do not possess adequate knowledge for this purpose. We know, for instance, that the conditions of urban life conduce to increased tuberculosis. We know also that the death-rate from tuberculosis has declined to a greater extent in cities than in country districts. Were we able to state quantitatively the influence and the extent of action of, say, overcrowding, indoor and dusty occupations, dirty habits, &c., in increasing tuberculosis, and of improvements in domestic cleanliness in habits and homes, in greater segregation of the sick, in better factory hygiene, and in higher nutrition in diminishing tuberculosis, we could measure the relative share of each of these factors in the given result in any community. Failing this, as public administrators we possess the wider outlook of physicians and of students of social phenomena, and we are satisfied that the precise teaching of pathology, the exact scientific experience in Denmark and in this country in the elimination of tuberculosis from herds of cattle, the analogous experience with leprosy, and the facts which we possess confirming our pathological knowledge and showing historical relation between hospitalisation of tuberculous patients in different communities and reduction in the tuberculosis death-rate, all point to the conclusion that to diminish infection from open cases of tuberculosis, and especially to diminish this

[1] The substance of an address delivered before the American Statistical Association in New York City on April 15th, 1921.

for infants and for children in the first five years of life, historically has been and administratively now forms the chief means for reducing the mischief done by this great enemy of mankind.

A similar difficulty arises in measuring the value of the work of health centres and of public health nurses in reducing infant mortality. Did we possess quantitative knowledge of the value of each factor influencing infantile health and disease, and were we able to measure the extent of action of each factor, it would be possible to assess the relative importance of each factor concerned in producing or preventing infantile sickness and mortality. But we usually cannot do this. It is not difficult to show curves of infant mortality for different cities, almost exactly parallel in a long series of years, in some of which health centres and public health nurses have been actively at work, while in others their number has been few or there have been none. Furthermore, such curves are not unnaturally flourished before us by economists, as well as by biometricians, as prima facie evidence of the inutility of the educational and medical work of physicians and nurses in child welfare work. But these confident assertions leave us quite cold! Were all the gross mass figures which could be marshalled to point to the conclusion that ignorance is no worse than knowledge, and that domestic cleanliness is not worth while, we should very properly doubt their accuracy or their teaching, not the merits of sanitary education and practice. In actual fact we can by comparison of carefully selected areas in different towns show the value of sanitation and instruction in reducing infant mortality, although —inasmuch as with these two factors other factors are also concerned for which accurate information cannot be tabulated—we are in most instances "up against" the impossibility of measuring the value of each single factor satisfactorily. In short, in a large part of public health work we must content ourselves with the fact that our work is on the lines which our knowledge of physiology, pathology, and medicine—the institutes of medicine—shows to be important, and reserve to the future the possibility of securing non-fallacious measurements of complex social influences.

Vital Statistics a Means to an End.

Although the examples just cited display my unwillingness to submit to the sole arbitrament of arithmetical standards in the measurement of results of public health work—when pathology and medicine give accurate guidance—I would not convey the impression that vital statistics fail to give most valuable guidance and leading in public health work; they are, indeed, indispensable for such work.

I have always regarded vital statistics as a means to an end, and not an end in itself, and my own first acquaintance with the subject arose out of the need to study these statistics, to which in the third quarter of the last century there was no English guide extant. The publication of my "Elements of Vital Statistics" led to personal contact and correspondence with medical statisticians in many countries; a relationship which became more extensive and more valuable as epidemiological investigations on successive subjects formed my fascinating task. I recall, for instance, investigations which I undertook into pandemics of rheumatic fever and of diphtheria, for the first of which scarcely any records from America were available; but in diphtheria there was ample evidence from this country showing the natural tendency of diphtheria to be more extensively continental than insular in its incidence, and for its endemic prevalence to be on such a scale as to disguise partially the epidemic characteristics of the disease. At a later period I recall an international inquiry in which Dr. T. H. C. Stevenson, now the distinguished medical statistician of the English Government, and I were engaged, in which it was desired to obtain corrected birth-rates for different cities, making arithmetical allowance for the proportion of married women in the population and for their age. And it will not be surprising to some of you to learn that the most valuable records available in America were those compiled by Dr. C. V. Chapin for the city of Providence (Rhode Island), records which, with similar records from Boston, showed that the American born in these cities had reached a position as regards fertility almost as low as that of Paris.

Birth and Death Registration.

During the last 10 years the value and scope of American vital statistics have greatly increased; and in addition to the important publications of the Federal and State governments, your literature has been enriched, and the borders of knowledge extended, by the publications of many workers, including Dr. Hoffman, of the Prudential Insurance Company, and Dr. Louis Dublin, of the Metropolitan Life Insurance Company. To both of these gentlemen I have been indebted for valuable references and information during the last two winters while lecturing in the Johns Hopkins University.

Your death registration area and your birth registration area have become extended, and the accuracy and completeness of registration have increased, though it is evident that much more needs to be done; and it remains an anomalous fact that in a community which prides itself, and rightly, on its business capacity, and which makes almost a religion of efficiency methods, there is a serious lack of driving power to secure from every community throughout the States the accurate data of births, sickness, and deaths without which periodic vital stock-taking is impracticable. In England Benjamin Ward Richardson could say many years ago, referring to Farr's epoch-making reports, that it is "no longer true that pestilence walketh in the dark. It is measured and registered, walketh at last in the open day." This is becoming more nearly true for the United States, though in many areas there is still inaccurate certification of deaths and unskilled classification of the returns in statistical offices; and the records of sickness are imperfect. A few years ago in many States the registration of births was so incomplete that it was impossible to determine whether any apparent decrease in the rate of infant mortality was real, or was due in part or entirely to "drives" which had been followed by improved registration of births. This, happily, is being improved, but the margin of error in many areas is still a serious handicap in statistical inquiries.

Special Difficulties in America.

Among the difficulties in the way of an accurate national system of registration of births and deaths may be named the following:—

1. America is the subject of the vastest experiment in the world's history in mixture of races. Not only has it a large negro population and a not inconsiderable population of the red and yellow races; but Anglo-Saxons, Germans, French, Slavs, Italians, Jews and other peoples are adding to its population year by year; and although the Anglo-Saxon element still predominates, this preponderance will cease ere long unless relative race birth-rates greatly change; and the largest element on this continent will be no longer Anglo-Saxon. Happily, the American population of the future will still possess the glorious heritage of law and language, of freedom and self-government, and of moral ideals, with which the name of Anglo-Saxon is rightly associated. With such a conglomerate and mobile population, with problems of digestion and assimilation of foreign elements on an enormous scale, it is not surprising that registration of births and deaths, with its possibilities of measuring the relative vitality and social progress of different social elements, has been neglected. It is none the less a misfortune for humanity that accurate and complete records have not been kept of the greatest social and sanitary experiment in the world's history.

2. The State sovereignty of each of the 48 States has been inimical to the compilation of accurate comparable national statistics. The Bureau of Vital Statistics in the Department of Commerce of the Federal Government publishes annual reports which year by year are increasing in value; but water cannot spontaneously rise above its own level, and these reports have no higher value than that of the records of each individual State. Although the international rules as to classification of deaths are well known, what certainty have we that in the majority of these States these rules are rightly followed in the allocation of deaths to their appropriate heading? It would probably be impracticable for the Federal Government, in view of the magnitude of the task and the separate sovereignty of each State to arrange for a Federal as well as a State analysis of every single death in the country, thus ensuring exactly comparable data. This has been done in England, thus giving an accurate check on the locally published vital statistics for every sanitary area throughout the country, and rendering these statistics of local mortality comparable with those for all other areas.

3. In the majority of States the lack of civil service conditions of appointment and tenure of office of the statistical superintendent, has, I gather, meant much inefficient work. This is pre-eminently an appointment in which evidence of competence for the post should be demanded. The majority of State statisticians in the past have been untrained physicians, with no special interest in the compilation of accurate statistics; many were not concerned with enforcing the law of registration, and were ignorant of the principles of death certification and classification. In the General Register Office in London there is a medical statistician, a worthy successor of Dr. Farr, who has associated with him a staff competent to undertake all the needed tabular work, and who can call in the services of actuarial consultants when required. This secures a due performance of the work of registration, tabulation of results, and commentary on the classified results. The knowledge of a fully trained scientific physician, an adequate training in the principles of death certification, and of the classification of diseases, are indispensable in collecting and in utilising vital statistics; and many well-intentioned investigations by biometricians, so-called, have shown what ridiculous results may be published in the absence of accurate pathological and medical knowledge. Complexes are treated as

individual entities; "constitutional diseases" occupy the stage, although this term has ceased to have a definite and exact meaning in modern pathology. Similarly, "heart diseases" and "renal diseases" are used in comparisons, as though each of these complexes had a single and simple, instead of a multifarious, causation. The constitutional factor and the organic fitness of the population are the subject of pseudo-learned disquisition, in happy ignorance of the elementary facts that the majority of so-called constitutional diseases—possibly all—are due to poisoning or infections derived ab extra, and that cardiac and arterial diseases, for instance, owe their origin chiefly to infections, of which syphilis and rheumatic fever are far and away the most important. Incidentally, although we may properly attach importance to the hygiene of middle life, and to periodical medical examinations as means to aid in preventing or in securing the early treatment of illness, it is well to bear in mind that the prevention of breakdown in early and late middle life is much more wrapped up with the prevention of the infections of childhood, of adolescence, and of early adult life than with any other factor that can be named. In substantiation of this statement I need only mention tuberculosis and syphilis, which together probably are responsible for one out of every five deaths from all causes at all ages in the aggregate.

4. It is unfortunate that in some states, including, I believe, Massachusetts, Ohio, and Michigan, the registration of births and deaths is not in charge of the Public Health Department of the State; and that ready access of each health officer to the vital statistics of his area may thus be a matter of grace, not of right, sometimes of belated grace.

5. As far as I can ascertain, it has not been found practicable to relegate institutional deaths to the vital statistics of the place of usual residence of the deceased. In England, Dr. Stevenson and I were able to organise a successful system by virtue of which the General Register Office in London has become a clearing house, and all deaths of non-residents, institutional as well as others, are referred to the area in which the deceased lived. Prior to this, curious errors occurred. An area in which a large maternity institution existed had a terrible infant mortality; and a city which prided itself on its low tuberculosis death-rate and ascribed this low mortality to its dispensary machinery, had its tuberculosis hospital for advanced cases outside the city boundary! To what extent such blunders occur in America, I cannot say. Its dimensions and population are probably too vast to admit of a federal system of relegation of deaths of outsiders; but it might be done for each state. In passing I would deprecate the imperfect correction for deaths of visitors which was commonly practised in England prior to the institution of the system I have indicated. Health officers very willingly excluded institutional deaths of visitors; but were less willing to add outside deaths belonging to their area!

6. In sickness registration I had the privilege of initiating one of the most valuable statistical reforms in England—viz., the weekly tabulation in the offices of the Local Government Board (now the Ministry of Health) of the number of cases of each of the notifiable infectious diseases in every one of the 1800 sanitary areas in England and Wales, and their publication and distribution within three or four days to every health officer. For some 14 years these have now been summarised in an annual return, thus presenting one of the most valuable epidemiological mines of information extant. The weekly returns of cases circulated from Washington by the Public Health Service are a step towards securing similar statistics in this country; and in this connexion should be mentioned the valuable relation established between the Federal and State Health Services by the appointment of officers of the latter as collaborating epidemiologists.

7. A striking lack in the vital statistics of the United States is with respect to housing accommodation. The decennial census returns in England enable the health officer to ascertain for all cities and larger areas the number of inhabited houses in each ward, the number of families living in one, two, three, four or more rooms, the number of rooms in each of these groups in which there are on an average more than two persons per room, and whether the overcrowding is of children or of adults. This information has important social significance.

8. I do not propose to discuss the difficulties which must obviously arise federally from having the responsibility for vital statistics divided between several Federal Departments; nor those which arise from the county control of collection of statistics in some states. I merely state the general proposition in which all familiar with the importance of the subject and the fundamental need for uniformity of method in securing data and in classifying the data when obtained will agree, that *centralised administration on a large scale is essential if accurate and strictly comparable statistics are to be obtained.* It is equally necessary that every health officer of every state, of every county, and of every city or smaller community should receive at least weekly full particulars of every birth and death occurring within his area, and should receive daily notifications of every case of infectious disease occurring within his area.

The preceding very imperfect review of the situation may be supplemented by some further suggestions—obvious, but none the less important—for making the statistics of each state and of every area within the state increasingly useful in the service of the community. Vital statistics are merely a means to an end. Their value consists in the light which they can throw on the prevalence of disease and on the means for diminishing its incidence.

Sanitary Indices of the Welfare of a Community.

I have not seen a State Public Health report in which the possibilities of utility of vital statistics have been fulfilled, although many such reports approach this goal, and still more contain much valuable material. It is necessary to bear in mind, however, that a heap of bricks does not constitute a house; and that undigested statistical matter should preferably be filed in the statistical bureau for further reference and treatment, and not presented in expensive and repellent tables to a public which is quite properly unsympathetic to such matter. There is need for detailed study of the vital statistics of every city and state, by men who have adequate medical knowledge, who can avoid the elementary pitfalls of statistics, and who above all are enthusiastically obsessed with the public health possibilities in the careful study of local statistics. In statistical work there has been, hitherto, too much shovelling into heaps, and too little building of the edifice of public health. No elaborate mathematical work is needed for the study which I am advocating, or for ordinary public health needs; but it is necessary that there be an observance of the well-known rules of statistical accuracy and of sound reasoning, based on scientifically established pathological and medical knowledge, and made with an enthusiastic desire to make statistics act as a pointer to the areas in which excessive mortality or sickness exists, in order that, an intensive study of its vital statistics having been secured, a corresponding social and sanitary investigation may follow and the appropriate remedy may be applied.

Such intensive studies are of special immediate importance in relation to the mortality of maternity, infant mortality, and mortality from tuberculosis. I am assuming that the sanitary index formed by typhoid fever and the important index of domestic cleanliness which the prevalence of infantile diarrhœa supplies, are kept constantly under supervision.

Together with these two, there are no more important indices of the welfare of a community than the three named above; and it ought to be practicable to state, year by year, for every area and every subdivision of an area—e.g., each ward of a city, the mortality associated with child-bearing, the total and the neo-natal infant mortality (i.e., under one year old and under one month old) in terms of births; and to take public health action in accordance with the findings. Hence the essential importance of complete birth registration. And it is not reassuring to find that in the year 1916 in the New England states there were no birth certificates in the case of 15 per cent. in Connecticut and 18 per cent. in Rhode Island, and of 5·7 per cent. in Vermont of the infants who died under the age of one year. Allowing for migration of infants from without each state, which must be small in amount, these figures cannot be regarded as satisfactory.

Selection of Health Work based on Statistical Study.

How much more effective would be the work of our public health nurses and at our health centres if the work were concentrated particularly on the infants in areas in which intensive statistical studies show that infant mortality is heaviest; and how much better directed and therefore more successful would be that work in the diminution of neo-natal mortality if every health officer had it forced on his attention that in some parts of his area the loss of life in the first month of extra-uterine life may be twice as heavy as in other parts; and if instead of futile observations as to the relative importance of "congenital debility," "prematurity," "marasmus," or the like in the death returns—which are mere labels of inexactitude of knowledge—and instead of theoretical and generally unfounded assumptions that deaths occurring at this tender age are unavoidable, assistance were given which would secure adequate care of the mother in pregnancy, in parturition, and during the critical first month after birth. It may of course be argued that unless we know the causes of this early infant mortality we cannot act intelligently against it. Such a statement illustrates well the difference between the armchair statistician and the competent physician engaged in public health work. The latter knows, for instance, that syphilis is responsible for a large share of this early infantile mortality, although it but seldom emerges in death certificates, and that its maleficent action on fœtal tissues can be prevented. He knows again that many of the fatal conditions, which cannot as yet be expressed in exact pathological terms, do not arise when appropriate medical, nursing, and domestic

assistance are provided for the expectant parturient and nursing mother. The statistical differences in neo-natal mortality, and it may be added in the number of still-births, in different areas amply confirm this conclusion.

The definition of still-births adopted in different states varies, and apart from this there are large differences in the extent to which such births are registered, and to propose, as has been done, to state puerperal mortality in terms of total including still-births, instead of in terms of live-births is to depart from the nearest approach to an accurate denominator for the rate hitherto available.

Natural Limitations of Biometrics.

In conclusion let me, while expressing my appreciation of the essential rôle of vital statistics as an instrument in extending our knowledge of the epidemiology and social history of each disease (its social history is really a part of its epidemiology) in estimating the relative position of different communities, and in assessing the value of sanitary and social work, deprecate the statistical use of groups of diseases, of multiform and heterogeneous origin, for comparative purposes as being just as unscientific as it would be for the biometrician or the chemist to insist or even to permit himself to study the properties of hydrogen in the contents of a jar containing a mixture of this gas with half a dozen other gaseous elements. I further press the point that vital statistics can have no higher value than that of the individual death certificates on which they are based; that no conjuring with classifications will render indefinite and dubious data other than they are; and that the only line of safety in most instances is to study each certified cause of death independently and separately.

I would, finally, emphasise the important consideration that when facts having only a qualitative and compound value are being studied, and when the factors concerned cannot—as is so often the case—be analysed quantitatively, we are justified in denying, indeed it is our duty to deny, the value of "biometrical" work based on such data, and in resting our inferences and our administrative action, as guardians of the public health, on a careful balance of all available evidence, giving chief place to exact physiological and pathological evidence bearing on our problem.

VACCINATION IN THE NORTH-WEST FRONTIER PROVINCE.

IN his report on vaccination in the North-West Frontier Province of India for the year 1920–21, Lieut.-Colonel W. M. Anderson, I.M.S., states that the total number of vaccinations performed during the year was 116,167 against 134,532 in the preceding year. 2073 deaths from small-pox were recorded. The attitude of the people towards vaccination is, on the whole, favourable. Revaccination, however, is considered unnecessary and troublesome, except when small-pox prevails in epidemic form. There is no religious prejudice against vaccination. Diminution in the number vaccinated is attributed to discontent among the vaccination staff caused by their inadequate pay.

ABERDEEN UNIVERSITY ROLL OF SERVICE.

THE Aberdeen University "Roll of Service in the Great War" (Aberdeen University Press. 21*s.*), edited by Miss Mabel Allardyce, with a Foreword by Principal Sir George Adam Smith, has recently been published. The Roll of Service includes biographies, and in nearly all instances portraits also, of the 341 members of the University who gave their lives, and gives the service records of the 2852 graduates, alumni, and students who served with the forces or did work of national importance. There are also two Appendices, one dealing with the service of University officials and the other giving a list of civilian prisoners of war.

MEDICINE AND WHITAKER'S ALMANACK.

THE board of directors of J. Whitaker and Sons, Ltd., proprietors and publishers of "Whitaker's Almanack," has been strengthened by the inclusion of Mr. Edgar Whitaker, who has relinquished his ophthalmological practice at Palmerston North, New Zealand, and returned to England for the purpose. The reconstructed board consists of three sons of the late Mr. J. Whitaker, F.S.A., who founded the annual bearing his name in 1868, and edited it until his death in 1895. Mr. G. H. Whitaker, M.R.C.S., F.R.S.A. (managing director), is this year Master of the Woolmen's Company. Mr. C. W. Whitaker, M.A., F.S.A. (editor), who is a member of the Common Council of London and chairman of the Central Markets Committee. Mr. E. Whitaker, M.R.C.S., L.R.C.P. (business manager), who served in the South African War and was gazetted to the Royal N.Z. Artillery at the outbreak of the Great War, was at the time of leaving New Zealand chief ophthalmic surgeon and treasurer of the Palmerston North Hospital Board, one of the largest and best-equipped hospital boards in the Dominion, which has recently been enlarged and equipped with the latest X ray and bacteriological departments to the total cost of £56,000. He was recently President of the Palmerston North B.M.A. (1919–20).

MOTHER'S AID CENTRES IN VIENNA.

ACCORDING to the Record of the Save the Children Fund of Oct. 1st there are now 56 Mothers' Aid Centres in Vienna. Infants and children up to 6 are examined under the double inspection of a doctor and a child-welfare visitor, who follows up the case; sees that the doctor's advice is carried out, and so constitutes an invaluable safeguard in the case of delicate children. It is announced by the Vienna Jugendamt that one of these visitors is now to be attached to every school. This effort of Vienna to help herself has been supported by the Friends' Relief Committee, and the American Relief Administration also takes a warm interest therein.

A bad omen for the winter now ahead is the renewed depreciation of the crown in Vienna (30 Austrian crowns are now equal to about 3*d.*), and the sudden leap in the prices of the necessities of life, such as flour, bread, and especially fat, which has almost disappeared from the market. Since the beginning of August flour has risen from 14 to 30 kronen, bread from 9 to 15 kronen, fat from 180 to 420 kronen. New and terrible privations, such as those experienced in 1918, are expected by old inhabitants of Vienna, who have experienced all the phases of the Austrian catastrophe.

HYGIENE AND MEDICINE IN SCOTLAND, 1745–1900.

AT the annual meeting of the Caledonian Medical Society, held recently at the Royal College of Physicians, Edinburgh, the presidential address delivered by Prof. William Russell took the form of a survey of the social and medical development of Scotland from 1745 to the beginning of the twentieth century. After a brief reference to the prehistoric and historic blending of races, and to the establishment after Bannockburn of a corporate and independent Scots kingdom, Prof. Russell proceeded to show how housing, sanitary, and labour conditions, natural enough in rural communities, became monstrous when massed in towns, where the iniquity of female and child labour eventually roused thinking people, so that it became possible to legislate for the protection of women and children. The outcome took the forms of sanitary legislation, housing schemes, maternity and child welfare schemes. With reference to the development of medicine during the period under review, Prof. Russell began with the name of William Cullen's "First Lines of the Practice of Physic, including the Definitions of the Nosology," in which were reviewed the systems of medical thought current in that period—the period of the search for an underlying principle that might explain health and disease—and also referred to William Pulteney Allison's "Outlines of Physiology and Pathology," showing how the schools of medical theorists were gradually displaced by the revelations and discoveries attained by accurate observation and laborious investigation. The beginnings of emancipation from the tyranny of metaphysics were greatly strengthened by the appearance of Laennec's "Mediate Auscultation" in 1819, and its translation by Forbes in 1838. Controversies over principles were replaced by observation; with Laennec modern medicine really began. Two other landmarks were Pavlov's "The Work of the Digestive Glands" and Metchnikoff's "Comparative Pathology of Inflammation." As an example of the necessity of physiological knowledge before a generalisation is possible, Prof. Russell pointed out how arteriosclerosis was still regarded as a natural and normal change characteristic of advancing years, whereas when full acceptance was reached of the physiological laws which acted upon the blood vascular system, the span of life would be lengthened to all who were not cut down by some acute or infective malady.

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